

Eat Smart Alaska'

**Nutrition-Related Chronic Disease in Alaska
Base-line Needs Assessment**

**Eat
Smart
Alaska!**



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Eat Smart Alaska!

Nutrition-Related Chronic Disease in Alaska 1997 Needs Assessment

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Executive Summary

This is a base-line needs assessment of the nutritional status of Alaskans as it relates to chronic disease development. It is a profile of factors which influence the immediate and long-term nutritional well-being of the people who live in the state.

Diet and nutrition play an important role in the development or prevention of four of the top ten leading causes of death in Alaska and the US. When we look at the root causes of death, we find that 50% of all deaths are related to lifestyle choices, and of that, nearly 30% are related to poor diet and inactivity. Our understanding and appreciation of the vital role nutrition plays in our immediate and long-term health has increased during the past 25 years. No longer are infectious diseases the primary cause of death in this state or the US. Chronic diseases such as heart disease and cancer are responsible for most deaths today.

To effectively reduce the burden of chronic disease in the state, a multi-faceted, comprehensive approach that focuses on increased physical activity and enhanced eating patterns is required.

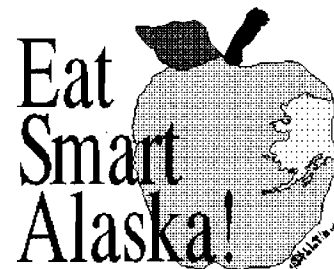
This document is intended as a resource for communities to use in identifying their specific needs, and for the public-private partnership *Eat Smart Alaska* to use in establishing a plan to lead statewide efforts to promote healthful eating patterns. It will also assist in tracking future trends in our population's nutritional status. Additional data collection will be required to provide a more complete profile of factors impacting nutritional status at the community level.

When available, information is reported by six Labor Market Regions to provide communities within those regions with information more specific to their needs than statewide data. Where appropriate, national trends are reported. In many cases, Alaska-specific data are lacking and insufficient resources were available to collect new data. Existing data suggests, however, that eating patterns among Alaskans are similar to those found in the rest of the US. Although additional studies are needed to more clearly define the nutritional status of our population, available data can be used to help assess local needs and develop programs to promote more healthful food consumption patterns among our residents.

This baseline needs assessment is not intended to dictate solutions. The most effective solutions occur in communities that actively assess their needs and develop and implement change strategies.

Report Highlights

- Cancer, heart disease, stroke, and diabetes are four of the top ten leading causes of death in Alaska and the US; all are nutrition-related.
- The prevalence of Alaskan adults who eat five or more servings of fruits and vegetables is below the national median. Only 19% of Alaskan adults consumed the minimum recommendation of “5 A Day” during 1994. Women reported eating more fruits and vegetables than did men.
- Most Alaskans do not know they should be eating a minimum of 5 daily servings of fruits and vegetables.
- During 1995, about 52% of middle school students and 49% of high school students reported eating no cooked vegetable on the day prior to being surveyed.
- During 1995, only 37% of high school boys and 30% of high school girls reported eating five or more servings of fruits and vegetables on the day prior to being surveyed. These numbers are higher than those reported for the total US which are 33% of boys and 23% of girls.
- During 1994, 28% of Alaskan adults were considered overweight based on body mass index. The reported prevalence of overweight is greater among men than women and increases with age.
- Dietary fat is one of the major nutrition-related contributors to chronic disease. The level of fat intake among Alaskans has not been sufficiently assessed.
- During 1994, 48% of Alaskan adults reported a sedentary lifestyle. Among children, physical activity declined as participation in physical education classes decreased with increasing grade level.
- In village and rural areas, geographical barriers and limited transportation by road impact the availability of and accessibility to a variety of healthful foods, especially fresh fruits and vegetables.
- The cost of food at home to feed a family of four ranged from about \$95/week in Anchorage to \$200/week in villages during March 1996.
- Availability of and access to nutrition service providers is limited by geographic barriers and an insufficient number of trained professionals and paraprofessionals.
- Alaska has one of the youngest populations in the US, as well as one of the fastest growing elderly populations. The old and the young are important target groups for nutrition intervention: children are the prime audience for promoting healthful eating habits and preventing the development of chronic disease later in life; the elderly, in contrast, are most likely to suffer from nutrition-related chronic diseases such as cancer, heart disease, diabetes and stroke.
- Nutrition funding for health promotion and chronic disease prevention is short-term, inadequate, and unstable.



Introduction

Eat Smart Alaska - Goal and Mission

Eat Smart Alaska is a coalition of public and private partners dedicated to enhancing food consumption patterns among Alaskans. Initiated by the State of Alaska Department of Health and Social Services, Division of Public Health, Section of Maternal, Child and Family Health, Chronic Disease Nutrition Program during March 1994, the coalition is composed of public and private organizations. Partners from state and local government include representatives from health agencies, agriculture, commerce, and education. Representatives from the private sector include food wholesalers and retailers, non-profit organizations, hospitals, food service personnel, and consumers.

The goal and mission of Eat Smart Alaska are:

Goal - To help prevent and reduce the burden of diet-related chronic diseases (e.g. cancer, heart disease, stroke, and diabetes) by enhancing healthful eating patterns among all Alaskans.

Mission - To shape food consumption in a positive way to promote health and reduce the burden of disease among all Alaskans. We do so by:

- *promoting increased consumer demand and options for foods to achieve healthful eating patterns;*
- *enabling people to make informed food choices based on sound, scientific advice;*
- *creating public/private partnerships to share responsibility for action.*

Healthy Alaskans 2000

During February 1994, the Alaska Department of Health and Social Services published a major planning document, *Healthy Alaskans 2000* based on *Healthy People 2000*. This report is the work of more than 500 Alaskans who worked to prioritize health needs for 22 different areas of health. Findings and recommendations of the report illustrate the need to improve the disease prevention and health promotion aspects of health care.

Healthy Alaskans 2000 was one of the documents used as a basis for this needs assessment and the launching of "Eat Smart Alaska."

Two indicators from the *Healthy Alaskans 2000* priority area "Nutrition" have been adopted as objectives of Eat Smart Alaska with slight modifications. The objectives are:

- 1) *Increase consumption of complex-carbohydrate and fiber-containing food. Increase to 30% or more the percentage of adults (and children) who consume 5 or more daily servings of vegetables and fruits by the Year 2000.*
- 2) *Reduce the population's daily average dietary intake of fat. Reduce average daily fat intake to 30% or less of total calories (among people 2 years and older) by the Year 2000.*

See Appendix A for selected *Healthy People 2000* national health promotion and disease prevention objectives related to nutrition and chronic disease prevention.

Purpose and Use of this Report

During the last quarter of a century, researchers have discovered links between diet and chronic diseases. In the past ten years, there has been a remarkable degree of agreement on what we should eat to reduce our risk of developing chronic diseases such as heart disease and cancer. Dietary modifications across disease categories have converged and dietary recommendations have been developed for the American public. Many positive dietary changes have been made by individuals; however, the average American still eats a diet relatively high in fat and low in complex carbohydrates. General public awareness of health and diet has not brought about large-scale changes in eating behavior. Clearly, new efforts to modify eating patterns are needed.

The intent of this document is to provide a profile of nutrition factors related to chronic disease in Alaska, including statistical data, community opinion data, and environmental factors, and to profile relevant programs that address the nutritional health of Alaskans.

The Eat Smart Alaska coalition will use this report to develop a plan of action to mobilize Alaskans to improve their eating patterns. The plan should incorporate both short- and long-term strategies to keep the coalition focused, visible, and excited about its work. Communities are encouraged to use the report to initiate and evaluate action plans specific to their population.

Funding was not available to collect new data or to manipulate existing data; therefore, this report is a compilation of available local, state and federal information. It is intended as a baseline to be updated bi-annually and used as a basis for identifying trends.

Organization of the Report

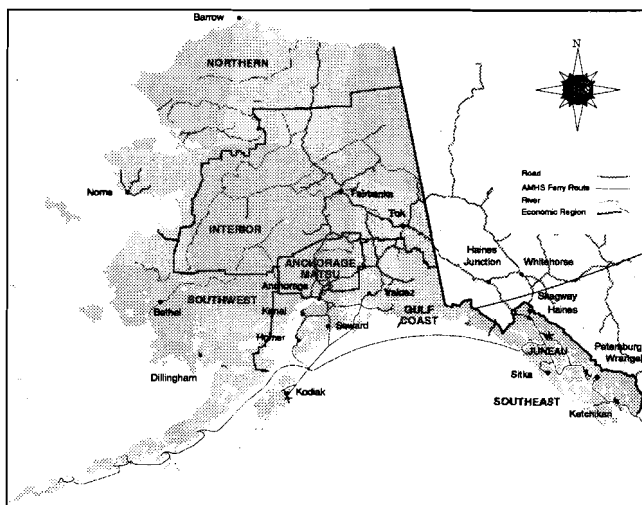
When available, information in this document is organized and reported by Labor Market Region. These six regions were used as an organization tool because they are more manageable than 27 census areas; they are used to describe the population of Alaska in other documents (such as *Alaska Population Overview*); they separate the two major urban areas of the state (Anchorage and Fairbanks); and they define major geographic areas of the state. The six Labor Market Regions of Alaska are listed below. See Appendix B for census areas included in each region.

Anchorage/Mat-Su Region
 Gulf Coast Region
 Interior Region
 Northern Region
 Southeast Region
 Southwest Region

The Behavioral Risk Factor Surveillance System (BRFSS) is a major source of behaviors relating to health data on adults (18 years and older) living in Alaska. The four strata used to define areas for the BRFSS roughly correspond to the Labor Market Regions with one major exception: Anchorage and Fairbanks are in the same BRFSS region. The BRFSS Regions and Labor Market Regions correspond as follows:

<u>BRFSS Region</u>	<u>Labor Market Region</u>
Urban	Anchorage/Mat-Su (<i>All</i>)
	Interior (<i>Partial: Fairbanks and SE Fairbanks</i>)
Southeast	Southeast
Gulf Coast	Gulf Coast
Bush	Interior (<i>Partial: Yukon Koyukuk Census Area</i>)
	Northern
	Southwest

Figure 1. Labor Market Regions in Alaska



Section I: Background

Living in Alaska ¹

Geography and Environment



Alaska is an extraordinarily large state. Encompassing 586,412 square miles, Alaska is larger than Texas, California, and Montana combined. Within its borders lie both the nation's largest national forest, the Tongass (16 million acres), and the second largest, the Chugach (5.9 million acres). It has the largest national park in the United States, the Wrangell-St. Elias National Park (12,318,000 acres) and the largest mountain-ringed watershed on the continent, the Noatak National Monument and Preserve (6,460,000 acres). Alaska is a very young land; its character is still being shaped by volcanoes, glaciers, earthquakes, and tidal waves.

Many villages in Alaska lack basic conveniences like running water and remain accessible only by small plane or boat. Throughout rural Alaska, called the Bush, very few local economies exist. Many villagers live off the land and its wildlife; survival depends on hunting, fishing, trapping, and gathering wild berries.

Known as the land of the midnight sun, much of Alaska is bathed in sunlight almost 24 hours a day by the summer solstice. The record high temperature is 100 degrees F, though average temperatures are much more moderate. Winters, however, are long, dark, and harsh. Bone-chilling temperatures, dipping to -80 degrees F, can occur. Wind chill temperatures often plunge to -100 degrees F or lower.

The cold climate causes the earth's surface to freeze for a large part of the year. Throughout much of the state, the earth lying at variable depths beneath the surface remains frozen permanently (this is called permafrost). Permafrost defies most construction technology. Across much of the state, permafrost shapes life: you can't till it and trees don't grow in it. You can't dig wells in it, and sanitation systems become extremely expensive.

Transportation

Alaska's vastness, its formidable terrain, and its extreme climate challenge the delivery of health care to its citizens. The lack of an infrastructure compounds the challenge. Building highways over permafrost or in mountain terrain is expensive. Once built, highways are not easily maintained: freezing breaks up the pavement and creates axle-breaking potholes; the permafrost causes the pavement to buckle and heave. "Frost heaves" make you think you're driving over turbulence. Not surprisingly, Alaska has few roads. To get there in Alaska, you fly.

Number 1 in size, Alaska ranks 47th among the 50 states in total road miles. Of its 13,485 miles of roads, only 1,089 are classified as interstate highways. Only five of Alaska's urban centers are connected by road. Travel by road, when possible, often requires considerable time due to the great distances between towns and adverse weather conditions. Intrastate air travel in Alaska often involves greater distances than interstate travel in the lower 48. Fares for air travel are expensive.

Demographics

Population Characteristics

Population Density²

Alaska averages 0.96 persons per square mile in comparison to an average population density of 70.33 persons per square mile for the entire United States. The population density can vary greatly in Alaska, however: from 133.3 persons per square mile in Anchorage, to 0.2 persons per square mile in areas such as Skwentna (Bureau of the Census, 1991). Forty-one percent of the state's population reside in Anchorage; 61% reside in Anchorage, Fairbanks, and Juneau; and 75% of Alaska's population live in the five largest census areas of Anchorage, Fairbanks, the Kenai Peninsula, Matanuska-Susitna Borough, and Juneau. While 70% of all Alaskans live in 19 urban areas of 2,500 persons or more, 46% of Alaska Natives live in rural areas with less than 1,000 persons. See Appendix C for 1990 Alaska population density by labor market region.

Gender Composition

Alaska has the lowest overall percentage of women of any state in the US. In July 1995, approximately 48% of Alaska's population was female (AK DOL, 1996). Another way of expressing that figure is to say there were 100 females for every 108 males.

Most communities throughout the state tend to be like the rest of the United States which is about 51% female (AK DOL, 1993). Some communities, however, have a large proportion of male residents because of the type of industry or employment. Communities with military installations, logging, fishing, and mining operations are the primary

areas with distorted gender ratios. An additional factor contributing to the higher proportion of males to females in Alaska is the population's young age; in states where populations are older, the increased life expectancy among women contributes to the greater proportion of females in the population. Alaska has more young people and a lower median age than the rest of the US, thus we have more males in our population.

Age Composition

Alaska has one of the youngest populations in the United States, but our population is aging. The old and the young represent important target groups for nutrition programs: young children are the prime audience for promoting healthful eating habits; the elderly, in contrast, are most likely to suffer from chronic diseases such as cancer, heart disease, diabetes and stroke.

In 1995, the median age in Alaska was 30 years, up from 26 years in 1980. In the US, the median age during 1995 was 34 years. By race, the Alaska Native population has the youngest median age in the state (24), followed by blacks (27), Asian and Pacific Islanders (29), and whites (31) (AK DOL, 1996).

The old and the young are the fastest growing population groups in Alaska. For the years 1980-1990, Alaska ranked second in the nation for the fastest growing elderly and youth populations (Bureau of Census, 1991). During 1991, children under the age of five made up 10% of the state's population while those 65 and older made up only 4% of the population (Bureau of Census, 1991). In comparison, the average percent population over age 65 years for the US is 13%. Alaska has both the smallest proportion of persons over 65 in the nation and one of the largest percentage increases in the population over 65 of any state (105 % from 1980-1991).

The Southeast region of Alaska had the greatest proportion of senior citizens in 1991 (6%) and the Interior region the lowest (3%). See Appendix D for a breakdown of 1991 Alaska population over age 65 by labor market region.

Race Composition ³

The population of Alaska is often described in terms of Natives and non-Natives. The term Alaska Native is used to refer to the original inhabitants of the land that is now the state of Alaska. These include Eskimos, Aleuts, and Indians who differ from each other in origin, language and culture. From 1929 to 1995, the percentage of Alaska Natives decreased from 51% to about 16% of the total state population. The percentage of Alaska Natives in the state reached an all-time low of 15.5% in 1992, making the 1993 figure of 15.6% the first increase in the Native population since 1929. The total number of Alaska Natives has increased steadily, from 25,331 in 1910 to 97,004 in 1995. Alaska Natives are the largest non-white racial group in Alaska. Among non-Natives, the predominant race is white (76%) with much smaller proportions of blacks and Asian/Pacific Islanders.

The Alaska Native population is gradually becoming urbanized. During 1980, Bethel was home to the largest number of Natives, but by 1995, Anchorage had the largest number of Alaska Native residents in the state. Bethel ranked second with other significant Native populations along the western coast and northern part of the state. During 1995, almost half (48%) of Alaska Natives lived in census areas where Natives made up more than half the population. This percentage has declined from 1980 when about 55% of Natives lived in census areas where Natives made up more than half the population. At the same time, the proportion of Alaska Natives living in census areas with less than 8% Native populations is increasing. The Alaska Native population is gradually moving from small rural Native villages to larger, mainly white urban centers. See Appendix E for race distribution by labor market region.

Economic and Social Characteristics

Household and Family Size ⁴

Ninety-six percent (96%) of Alaska's residents reported belonging to some type of household (family or non-family) during 1990. The remaining 4% lived in group quarters. Of those living in households, 70% belonged to a family household and 30% to a non-family household. Of those in group quarters (people not belonging to a family or non-family household), 22% lived in an institutional setting (such as correctional institutions, nursing homes, psychiatric hospitals, and juvenile institutions) and 78% in other group quarters (such as group homes, rooming houses, dormitories, military barracks, and shelters). See Appendix F for family households by labor market region, 1990.

Statewide in 1990, of all family households (132,837), 80% were married couple households, 14% were households headed by a female with no husband present, and 6% were other types of households. Of the 56,078 non-family households, approximately 75% reported living alone and about 10% of all non-family households reported being age 65 or older and living alone. See Appendix F for breakdown of non-family households by labor market region, 1990.

USDA's Agricultural Research Service (ARS) found that people living alone eat a generally more nutrient-dense diet than those living in multi-person households (USDA, 1994). The ARS found that both single women and single men had diets significantly more nutrient-dense in niacin, vitamin B6, and folate than those in multi-person households, and that single women had diets significantly more nutrient-dense in other nutrients including carbohydrate, vitamins A and C, carotenes, vitamin E, iron and dietary fiber (USDA, 1994). The findings suggest that single people are more successful in consuming diets that follow current dietary recommendations for an adequate diet and good health. This is significant when considering that the proportion of Americans living alone grew substantially in the last 20 years. Nationally, one in four households (25%) is a person living alone (USDA, 1994); in Alaska, about 22% of all households are a person living alone (Bureau of Census, 1991).

Persons per Household and per Family ⁴

The average number of persons per household in 1990 in Alaska was 2.8, while the average number of persons per family was 3.3. Two regions of the state differed noticeably from these averages: the Northern Region of the State had 3.6 persons per household and 4.2 persons per family, while the Southwest Region had 3.3 persons per household and 3.9 persons per family.

Housing Characteristics: Kitchen and Plumbing Facilities

The lack of full kitchen and plumbing facilities impacts the types of foods an individual is able to prepare and consume. Without hot and cold piped water, an installed sink, cooking appliances or a refrigerator, a person's ability to prepare and store a wide variety of nutritious food in a safe and sanitary way, considered essential for good health, is severely compromised.

According to 1990 US census data (Bureau of Census, 1991), approximately 11% of households in Alaska lacked complete kitchen facilities and approximately 13% of Alaskan households lacked complete plumbing facilities. The high prevalence of incomplete kitchen and plumbing facilities in many rural and bush communities in Alaska severely limits people's ability to prepare a wide variety of foods in a safe and sanitary manner. See Appendix G for percentage of housing units lacking complete plumbing and kitchen facilities.

Employment ⁴

Of those aged 16 years and older, 74.7% of all Alaskans and 66.4% of women were in the labor force in 1990. Based on 1990 census data, Alaska has the highest percentage of women in the paid labor force (66% vs. the US average of 57%) of any state in the country.

The Southwest, Interior and Northern Labor Market Regions have the highest levels of unemployment and poverty in the state; the Gulf Coast, Anchorage/MAT-SU, and Southeast Labor Market Regions have the lowest levels of unemployment and poverty.

Median Household Income ⁴

Alaska ranked second in the United States in median household income (\$41,410) behind Connecticut (\$41,721) according to 1990 US census data. In addition to median household income, the state ranked higher than the national average for per capita income (\$17,610 vs. \$14,420). Comparisons of boroughs and census areas in the state reflect the presence of two leading industries: fishing and petroleum. Bristol Bay (Southwest labor market region), which is the most productive fishing area in the state, has the highest median household income (\$51,112). The North Slope Borough (Northern labor market region) ranked second (\$50,473) as a result of the petroleum industry. See Appendix H for percentage of people unemployed, per capita income and percentage of people living in poverty by labor market region.

Education and Literacy

As with many other health issues, educational attainment is often positively associated with nutrition knowledge and dietary practices. For example, individuals with a college education are more likely to believe they should eat four or more servings of fruits and vegetables than those who did not graduate from high school, and their consumption of fruits and vegetables is greater (Subar, 1992).

The ability to read and write is necessary for many food-related activities from making a grocery list to reading and comprehending food labels and sale information, reading recipes, interpreting nutrition information printed in newspapers and magazines, to following diets and medical nutrition therapy guidance for chronic disease prevention and control. These tasks are an integral part of healthful eating; many people with low literacy have difficulty doing these activities.

Educational attainment levels in Alaska are higher than the national average (See Table 1). In fact, Alaska had the highest percentage of high school graduates in the nation in 1990 (Bureau of Census, 1991). In Juneau, the state's capitol, nearly one in three people are college graduates; in Anchorage and Fairbanks about one in four are college graduates. See Appendix I for high school and college graduates aged 25+ by labor market region, 1990.

Table 1.
High school and college graduates aged 25 years and over, Alaska and US, 1990

	<u>Alaska</u>	<u>US</u>
High School	87%	75%
College	23%	20%

Source: Bureau of Census, 1991

Academic degrees, however, do not imply literacy. According to the report "Adult Literacy in America (US DOE, 1993)," 47% of the nation's adult population demonstrates low levels of literacy. Although we do not have state-specific information, this percentage is probably similar for Alaska's population (*Personal Communication with M Kissel, AK Department of Education, 1994*). One of the latest studies of literacy rates in America indicated "... that the most difficult tasks that an estimated 90 million adults can undertake include completing a Social Security form and determining the price difference between two items. Another 50 million could not perform tasks more difficult than locating an intersection on a street map (US DOE, 1993)."

Section II: Nutrition and Health

Nutrition and Inactivity as A Root Cause of Death

Diet has a vital influence on health. Sixty years ago diseases of nutritional deficiency such as rickets, pellagra, scurvy, beriberi, and goiter were prevalent in this country. Today, however, diseases associated with dietary excess and imbalance rank among the leading causes of illness and death throughout the United States.

The scientific literature indicates that about 35% of all cancers (Doll, 1981), 20 to 30% of heart disease (ASTPHND, 1993), and sizable proportions of other major chronic diseases such as stroke, diabetes, osteoporosis, and gastrointestinal disorders are associated with the typical American diet that has too few fruits, vegetables, grains, and beans, and too much fat (US DHHS, 1988).

A review of the leading causes of death in the United States by McGinnis and Foege (1993) identified and quantified the major external factors that contributed to deaths. The most prominent identifiable contributors to death are tobacco, diet and activity patterns, and alcohol. Fifty percent of all deaths are related to these lifestyle choices, and of that, nearly 30% are associated with dietary factors and activity patterns (McGinnis, 1993). Applying these figures to Alaska data indicates that during 1994, diet and activity patterns may have accounted for approximately 369 of the 2,460 deaths (15%) among Alaskans.

Routinely, the ten leading causes of death are categorized according to disease state as opposed to their root cause. McGinnis and Foege found that approximately half of all deaths that occurred during 1990 could be attributed to nine external factors, (Table 2).

Risk factors can be categorized as modifiable and non-modifiable. Diet is classified as a modifiable risk factor because we can do something about it—it is changeable. Diet is a risk factor for 4 of the 10 leading causes of death (diseases) to which death is

Table 2.
Actual Causes of Death in the United States in 1990

<i>Cause</i>	<i>Estimated No. of Deaths</i>	<i>Percentage of Total Deaths</i>
Tobacco	400,000	19
Diet/Activity	300,000	14
Alcohol	100,000	5
Microbial Agent	90,000	4
Toxic Agents	60,000	3
Firearms	35,000	2
Sexual Behavior	30,000	1
Motor Vehicles	25,000	1
Illicit Drug Use	20,000	<1
Total	1,060,000	50

Source: McGinnis, 1993

usually attributed (heart disease, some types of cancer, stroke, and diabetes). As the older population—i.e., those who experience the greatest chronic disease burden—in the US and Alaska ages, the public health cost of dietary imbalances will increase, especially if the prevalence of other risk factors such as smoking decreases.

Physical inactivity is a modifiable risk factor that has been identified in coronary heart disease (CHD), cancer, and diabetes. Physical activity (caloric expenditure) and diet (caloric intake) have an intimate relationship. When they are balanced, body weight is maintained; when intake exceeds expenditure, weight gain occurs; and when expenditure exceeds intake, weight loss occurs. Excess body weight in the form of fat (obesity) has been associated with the development of heart disease, breast cancer, and diabetes. It is estimated that diet and physical inactivity were responsible for 300,000 deaths (and possibly as many as 580,000) in the US in 1990—a number exceeded only by tobacco (400,000 estimated deaths)(McGinnis, 1993).

When modifiable risk factors contribute to a death, the death is considered premature and often preceded by impaired quality of life (McGinnis, 1993). *The 1988 Surgeon General's Report on Nutrition and Health* (US DHHS, 1988) found that for the two out of three Americans who do not smoke or drink excessive amounts of alcohol, what they choose to eat may shape their long-term health more than any other personal choice.

A person's "risk" for disease will be referred to often in the following paragraphs. That risk or relative risk (RR) is defined as: the risk of disease or death in an "exposed" population compared to the risk of disease or death in an "unexposed" population. In the case of coronary heart disease, for example, those who have one of the following risk factors are two to four times more likely (they have two to four times the risk) to develop coronary heart disease than those without one of the risk factors: high blood pressure, cigarette smoking, high cholesterol, or diabetes.

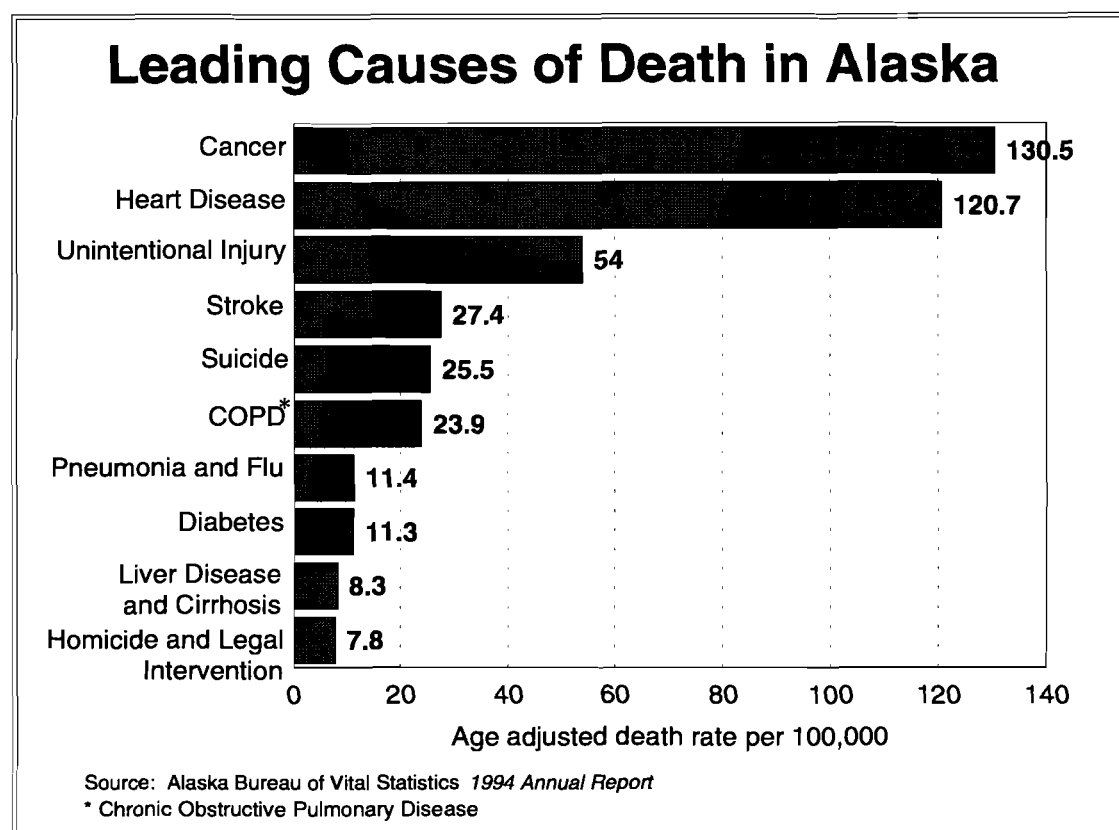
Leading Causes of Death in Alaska

In this section of the report, death rates refer to age-adjusted death rates. Age-adjusted death rates take into account the younger population of Alaska and make it comparable with the rest of the United States.

About 45 years ago, the leading cause of death for the total population of Alaska was infection (AK DHSS, 1991); during 1994, cancer and heart disease were the leading causes of death (ABVS, 1996)(See Figure 2). Cancer, which accounted for only 6% of all deaths during 1950, accounted for 23% of deaths in Alaska during 1994 (ABVS, 1996).

The leading causes of death in 1994 differed by gender and major race groups. Cancer was the leading cause of death for women and whites, while heart disease was the leading cause of death among men. The leading cause of death among Natives during 1994 was unintentional injury.

Figure 2. Leading Causes of Death in Alaska



The Link Between Diet and Chronic Disease

Four of the top ten leading causes of death in Alaska are nutrition-related; they are cancer, heart disease, cerebrovascular disease, and diabetes mellitus (ABVS, 1996). Other nutrition-related problems such as obesity, hypertension, and osteoporosis contribute to additional morbidity in the state. As indicated below, nutrition-related risk factors contribute to more than one disease (see Table 3). The role of diet as a risk factor for specific diseases is discussed in the following pages.

Table 3.
Nutrition-related risk factors associated with leading causes of death in Alaska and the United States

	Excess Dietary Fat	Elevated Serum Cholesterol	Low Intake of Fruits/Veg	Obesity	Hyper- tension	Diabetes Mellitus
Cancer	X		X			
Heart Disease	X	X	X	X	X	X
Diabetes				X	X*	
Stroke	X	X	X		X	X

** High blood pressure is a risk factor for complications of diabetes but not for the disease itself.*

Nutrition-Related Mortality

Cancer

The lifetime chance of developing cancer is estimated at about one in three (APHA, 1993). Cancer incidence increases with age and the incidence rate for all cancers combined has been increasing.

It is public law that all states have a cancer registry. The State of Alaska Department of Health and Social Services established a statewide cancer registry January 1, 1996. Funding to support the initiative is provided through the Centers for Disease Control and Prevention's National Program for Cancer Registries. The registry must comply with timeliness of reporting, quality of data, and ascertainment of cases criteria. The first annual report for Alaska should be available at the end of 1997.

Current estimates from the American Cancer Society (1996) indicate most new cancer cases in Alaska will be due to prostate cancer (290 cases), followed by female breast, (190 cases), lung (170 cases) and cancer of the colon and rectum (120 cases). The 1996 cancer death estimates for Alaska from the American Cancer Society are 150 deaths from lung cancer followed by colon and rectum and female breast cancer with 50 estimated deaths each.

The age-adjusted cancer death rates in Alaska were 128, 135 and 131 per 100,000 per year during 1992-1994. By race, the age-adjusted cancer death rate for whites during 1994 was 127 deaths per 100,000 population compared to 160 per 100,000 Alaska Native population (ABVS, 1996).

According to the report, *Cancer in the Alaska Native Population* (Lanier, 1993), rates for all cancers combined have increased significantly from 1969 to 1988 among Alaska Natives, especially lung cancer in men and women, colorectal cancer, and breast cancer in women. Lung cancer, followed by colo-rectal and breast cancer were the most frequently occurring cancers for the most recently reported years, 1984-1988. Cancer was thought to be a rare disease among Alaska Natives just a generation ago. Now, cancer among that population equals or exceeds that of whites in the US, and the survival rates are lower (Lanier, 1993).

Modifiable Risk Factors for Cancer

Modifiable risk factors for cancer include smoking and diet. It has been estimated that 30% of cancers are caused by tobacco and 35% of all cancers are related to diet (Doll, 1981).

Nutrition-Related Risk Factors for Cancer

Too much fat and too little fiber from fruits, vegetables, and whole grains are dietary risk factors for the development of some types of cancers. Limiting intake of high-fat foods, particularly from animal sources, and increasing fruit and vegetable consumption to at least five servings a day are current dietary guidelines for cancer prevention and control (ACS 1996 Advisory Committee, 1996).

Nutrition-Related Risk Factor: Excess Dietary Fat

It has been estimated that a 50% reduction in dietary fat from current levels may reduce total cancer incidence by about 33% in women and 17% in men in the 55 to 69 year age group (Prentice, 1990).

A diet high in saturated fat, especially from meat, has been associated with an increased risk of colorectal cancer (APHA, 1993; ACS 1996 Advisory Committee, 1996). It has been estimated that half of all colorectal cancer cases may be related to diet, with 15%-25% related to fat intake (APHA, 1993).

High fat intake is also being investigated in relationship to cancers of the breast and prostate. Studies have been inconclusive or shown a weak relationship between diet and these cancers (APHA, 1993, ACS 1996 Advisory Committee, 1996). Though some case-control studies have shown a positive association between fat intake and breast cancer among women, a recent pooled analysis of cohort studies which involved 337,819 subjects showed no association, even for women whose energy intake from fat was less than 20 percent (Hunter, 1996).

Nutrition-Related Risk Factor: Low Intake of Fruits, Vegetables, and Grains

Research has shown that people may halve their cancer risk with high (vs. low) fruit and vegetable intake (Steinmetz, 1996; Block, 1992). The protective effect of increased vegetable and fruit consumption is consistent for cancers of the stomach, esophagus, lung, oral cavity and pharynx, endometrium, pancreas, and colon (Steinmetz, 1996). Vegetables in general, and raw vegetables in particular, appear to provide a protective effect (85% of studies show a protective effect), while allium vegetables (e.g. leeks, onions, garlic and peppers), carrots, green vegetables, cruciferous vegetables (e.g. cabbage, broccoli and brussel sprouts), and tomatoes also provide a fairly consistent effect (70% of studies show a protective effect) (Steinmetz, 1996).

Fiber and phytochemicals (biologically active components of plants), are currently being investigated for their role in reducing cancer risk. Research on phytochemicals covers a broad spectrum; the role of phytochemicals may range from that of antioxidant, to one of retarding tumor growth, to one of helping the body dispose of carcinogens (Steinmetz, 1996; Schardt, 1994). To date, studies have not associated isolated phytochemicals, such as beta-carotene, with reduced cancer risk; rather it is the consumption of fruits and vegetables that is associated with reduced risk (ACS 1996 Advisory Committee, 1996).

Cancer of the colon and rectum is the second leading cause of cancer death among men and the third leading cause of cancer death among women in the US (APHA, 1993). Long transit times for fecal material due to a low fiber diet or too little physical activity may increase the risk for colorectal cancer development. The exact relationship between diet and colorectal cancer is not clear; however, a diet low in vegetables and low in whole grains has been consistently associated with this type of cancer (ACS 1996 Advisory Committee, 1996). For colon cancer, protection from vegetables in general, and raw and green vegetables in particular, is consistent (Steinmetz, 1996). For rectal cancer, the protective effect of cruciferous vegetables in particular, is most consistent (Steinmetz, 1996). It is estimated that half of all colorectal cancers are associated with diet, and 25% to 35% of these related to low intake of fruits and vegetables (APHA, 1993).

Studies have shown that a diet with few fruits and vegetables also increases lung cancer risk (Steinmetz, 1996; Block, 1992), and 100% of studies on lung cancer and fruit and vegetable consumption show a protective effect for this type of cancer from vegetables in general, fruit, green vegetables, and tomatoes (Steinmetz, 1996). Most lung cancer cases are due to cigarette smoking, however, approximately 5% of lung cancers may be due to diet (APHA, 1993). Fruits and vegetables reduce cancer risk whether or not people smoke (Steinmetz, 1996; ACS 1996 Advisory Committee, 1996).

Consumption of too few fruits and vegetables is also being investigated in relationship to cancers of the esophagus, oral cavity and pharynx. Green vegetables and citrus fruits appear to be consistently protective against these cancers (Steinmetz, 1996).

Heart Disease and Coronary Heart Disease (CHD)

As of this report, neither the Alaska Department of Health and Social Services nor the Alaska Area Native Health Service has a statewide prevention program which specifically addresses coronary heart disease or the broader categories of heart diseases and cardiovascular diseases. We have little state-specific information on heart disease in Alaska. During February 1996, the Alaska Department of Health and Social Services initiated discussion of a statewide cardiovascular disease plan. The planning process is on-going. A statewide Cardiovascular Disease (CVD) Prevention Plan meeting was held during October 1996.

The age-adjusted heart disease death rates in Alaska for the years 1992, 1993 and 1994 were approximately 130, 115 and 121 deaths per 100,000, respectively (ABVS, 1996). During 1994, whites died of heart disease at an age-adjusted rate of 116 deaths per 100,000 population, while Alaska Natives died of heart disease at an age-adjusted rate of 152 deaths per 100,000 population. The age-adjusted heart disease death rate for women in Alaska in 1994 was 82 per 100,000 female population, while for men the rate was 160 deaths per 100,000 male population. Heart disease is the leading cause of death among Alaska men. The ratio of male to female deaths from heart disease in 1994 was approximately 2:1.

The age-adjusted death rates from coronary heart disease were higher among Alaska Native males than non-Native males for the period 1992-1994. Rates among non-Native males have steadily declined during the past 15 years, while rates among Alaska Native males have remained relatively constant. Among females, non-Natives usually have higher rates of CHD mortality than Alaska Natives (*Personal Communication with Cathie Schumacher, AK DHSS, 7/96*).

Modifiable Risk Factors for CHD

Coronary heart disease is a specific type of heart disease that may be influenced by lifestyle choices. The major modifiable risk factors for coronary heart disease include elevated blood cholesterol (≥ 200 mg/dL), physical inactivity, high blood pressure ($\geq 140/90$ mm Hg), and cigarette smoking. Other modifiable risk factors include diabetes and obesity (APHA, 1993).

Those who have one risk factor for heart disease are likely to have many of the risk factors for heart disease; the greater the level of a risk factor, the greater the risk of having CHD (APHA, 1993). Furthermore, the risk of developing CHD increases markedly when a person has more than one risk factor; there is an additive effect for the major risk factors of high blood pressure, smoking, and high cholesterol (APHA, 1993). Table 4 shows the relative risk for developing CHD by risk factor.

Table 4.
Relative risk for developing coronary heart disease by risk factor

<i>Risk Factor</i>	<i>Relative Risk</i>
Hypertension* ($\geq 140/90$ mg Hg)	2-4
Cigarette Smoking	2-4
Elevated Cholesterol*	2-4
Diabetes*	2-4
Obesity*	< 2
Physical Inactivity	< 2

* *Has nutrition-related risk*

Source: APHA, 1993

Nutrition-Related Risk Factors for CHD

A diet high in fat, especially saturated fat, and low in fruits and vegetables, fiber and complex carbohydrates has been identified as contributing to elevated blood cholesterol and increasing risk for coronary heart disease (US DHHS, 1988). It has been estimated that approximately 20-30% of all heart disease may be associated with diet (ASTPHND, 1993).

Nutrition-Related Risk Factor: Excess Fat Intake and Elevated Blood Cholesterol

Elevated blood cholesterol, specifically elevated low density lipoprotein (LDL) cholesterol, is a major risk factor for CHD. Saturated fatty acid intake is the major dietary determinant of total and LDL cholesterol levels in populations and, therefore, of CHD risk. Low levels of high density lipoprotein (HDL) also represent a risk factor for CHD.

Although cholesterol levels and deaths from heart disease among the population have been declining (Sempos, 1993), heart disease remains the leading cause of death in the United States. It has been estimated that 5-20% of coronary heart disease mortality could be prevented by restricting dietary fat to a maximum of 30% of total calories (Bowner, 1991). Approximately 29% of all adults over the age of 20 may be candidates for diet therapy (Sempos, 1993).

The average American diet includes 34% of total calories from fat, and 12% of total calories from saturated fat (McDowell, 1994). These figures are above the National Cholesterol Education Program (NCEP) guidelines of 30% and 10%, respectively (NCEP, 1993). The figures represent a decline from 1987 levels of fat intake; however, the "decline" is relative to an increase in average calorie consumption by individuals (about 100-300 calories for persons age 12 and older) (MMWR, 1994). The absolute amount of fat in the diet has remained stable since 1987.

Diets of Alaska Natives, especially in rural Alaska, may vary from those of non-Native residents. Among at least one group of Alaska Natives, Siberian Yup'iks of Gambell, fat intake is high (about 43% of total calories), but saturated fat intake (11%) is comparable to the average American diet (Nobmann, 1996). Both HDL and LDL levels are high and the implications of the diet have not yet been verified. These findings indicate the need for special investigations for sub-groups of the Alaska population.

For those with total cholesterol levels ≥ 240 mg/dL, the risk of coronary heart disease doubles compared to those with levels below 200 mg/dL (APHA, 1993). It is estimated that 30% of CHD in the US is related to high blood cholesterol (APHA, 1993). Approximately 20% of the adult population has cholesterol levels over 240mg/dL, and about 47% has a level above 200 mg/dL (Sempos, 1993). For people with serum cholesterol levels of 250-300 mg/dL, each 1% reduction in serum cholesterol level results in a 2% reduction in CHD morbidity and mortality (Sempos, 1989). In subjects with already documented coronary artery disease, Ornish (1990) noted a 24% decrease in total cholesterol level and a 37% decrease in LDL on a 10% fat diet. In addition, coronary artery disease lesions were found to regress as measured on angiography after one year, whereas they worsened on a 30% fat diet (Ornish, 1990).

Nutrition-Related Risk Factor: Low Intake of Fruits, Vegetables, and Foods from Plants

There is growing evidence that low intake of fruits and vegetables may be associated with an increased risk for CHD. Studies show that people who regularly consume food from plants have low risks of CHD. This association is not well-understood; however, it may be the result of consuming a diet that is also usually low in animal fat and cholesterol (NRC, 1992). Soluble fiber from plant foods has been shown to play a role in reducing serum lipid levels which in turn reduces heart disease risk (Schneeman, 1994). Furthermore, recent studies indicate that increased consumption of total fiber, folic acid and other phytochemicals found in fruits and vegetables may play a role in reducing the risk of heart disease (Steinmetz, 1996; Rimm, 1996; Liebman, 1995; Willett, 1994).

Nutrition-Related Risk Factor: Obesity

Obesity is the result of consuming too many calories in relation to the calories expended by an individual; it is associated with coronary heart disease death at the upper ranges of body weight (at 140% of desirable weight for height or a body mass index greater than 30)(APHA, 1993). Lesser degrees of obesity do not have a clear link to CHD mortality except indirectly: the prevalence of high blood pressure and diabetes is three times greater among those who are overweight than among those of normal weight. Higher levels of total and LDL cholesterol, and lower levels of HDL cholesterol are also associated with obesity (APHA, 1993).

Where a person's body fat is deposited may further affect their CHD risk according to recent studies. Body fat deposited in the abdominal region (apple shaped body) appears to increase CHD risk more than body fat deposited in the lower body or hips (pear shaped body)(APHA, 1993).

Nutrition-Related Risk Factor: Hypertension

For some people, reducing salt and sodium intake is an effective means of controlling hypertension. The American Heart Association estimates that nearly one-third of the adult population in the US has high blood pressure. The risk of CHD increases as levels of blood pressure rise; people with elevated blood pressure are two to four times more likely to develop CHD as people with normal blood pressure (APHA, 1993).

Nutrition-Related Risk Factor: Non-Insulin Dependent Diabetes Mellitus

Diabetes increases a person's risk of CHD two to three times, and the outcomes of coronary events are more severe and result in death more often than among those without diabetes (APHA, 1993). CHD is the most common cause of illness and death among people with diabetes and accounts for more than 60% of deaths among this population (APHA, 1993). The risk for CHD is higher among women with diabetes, as compared to men, partly because of the greater national prevalence of obesity among women (APHA, 1993).

Stroke

Stroke was the third leading cause of death in the United States in 1994 and was the fifth leading cause of death in Alaska that year (ABVS, 1996). In addition to the deaths caused by stroke, millions of people in the United States are survivors of strokes resulting in billions of dollars of medical care and lost productivity costs.

Modifiable Risk Factors for Stroke

The major modifiable risk factors for stroke include high blood pressure, elevated cholesterol, diabetes, cigarette smoking, and heart disease. Oral contraceptive use, physical inactivity, alcohol use, and possibly obesity. Low intake of fruits and vegetables *may* also increase the risk for stroke. Table 5 shows the relative risk for stroke by risk factor.

Table 5.
Relative risk for stroke by risk factor

High Blood Pressure	4
Elevated Cholesterol	2-4
Diabetes	2-4
Heart Disease	2-4
Cigarette Smoking	2-4

Source: APHA, 1993

Nutrition-Related Risk Factors for Stroke

The nutrition-related risk factors for stroke include hypertension, elevated blood cholesterol, diabetes, and heart disease. Low fruit and vegetable intake may also be associated with an increased risk for stroke.

Nutrition-Related Risk Factor: Hypertension

For some people, reducing salt and sodium intake is an effective means of controlling hypertension. People with hypertension are four times more likely to have a stroke than those without hypertension (APHA, 1993). The risk increases as diastolic blood pressure increases. Studies suggest that reducing elevated blood pressure will reduce strokes 33%-50%, and that approximately 26% of stroke deaths in the US are due to hypertension (APHA, 1993).

Nutrition-Related Risk Factor: Excess Fat Intake and Elevated Cholesterol

Saturated fatty acid intake is the major dietary determinant of total and LDL cholesterol levels in populations. Some studies show that people with cholesterol levels of 220mg/dL or greater may have 3 times the risk for stroke as those without elevated cholesterol (US DHHS, 1988). Lowering cholesterol in these individuals would likely protect against stroke indirectly; people at risk of stroke are also at a high risk of developing CHD which is directly related to elevated cholesterol. It has been estimated that up to 20% of stroke deaths are associated with elevated cholesterol levels (APHA, 1993).

Nutrition-Related Risk Factor: Diabetes Mellitus

Diabetes increases the risk of stroke two to four times (CDC, 1995), and the risk is higher for women than men (APHA, 1993). However, diabetes accounts for a relatively small proportion of stroke deaths.

Nutrition-Related Risk Factor: Heart Disease

Having heart disease increases the risk of having a stroke by approximately two times (APHA, 1993). The risk of stroke can be reduced indirectly by controlling the risks for heart disease.

Nutrition-Related Risk Factor: Low Intake of Fruits and Vegetables

Research has shown that eating more fruits and vegetables reduces the risk for stroke (Gillman, 1995; Manson, 1994). A 20-year follow-up study of middle-aged men from the Framingham Study, for example, showed that for each increment of three servings of fruits and vegetables consumed per day, there was a 22% decrease in the risk of all stroke (Gillman, 1995). Researchers hypothesize that potassium, found in many fruits and vegetables, is the mechanism responsible (Steinmetz, 1996; Gillman, 1995), although available research shows that it is fruits and vegetables and not necessarily a specific nutrient or phytochemical that is protective.

Non-Insulin Dependent Diabetes Mellitus

In addition to being a leading cause of morbidity in the US and Alaska, diabetes of all types ranked eighth as the leading cause of death during 1994 in Alaska (ABVS, 1996). Ninety to 95% of people with diabetes have Type II or non-insulin dependent diabetes mellitus (NIDDM) (also called adult-onset diabetes)(CDC, 1995). About eight million people in the United States have been diagnosed with diabetes, and it has been suggested that for every known case of diabetes diagnosed there is at least one undiagnosed case (CDC, 1995). Type II diabetes is frequently associated with overweight, obesity and a sedentary lifestyle. Once it develops, diabetes does not “go away,” it must be controlled for the rest of one’s life.

In 1993, 61 Alaskans died of diabetes (underlying cause of death); 34% were under the age of 65 years. Unlike other causes of death, diabetes mortality shows no signs of declining. Data from Alaska’s Behavioral Risk Factor Surveillance System (BRFSS) indicate that about 4% of Alaskans aged 18 years and older have diabetes. Therefore, approximately 14,000 Alaskans have been told by a health care provider they have diabetes (BRFSS, 1995).

A study to determine baseline diabetes prevalence data among the Alaska Native population during 1985 (Schraer, 1988) became the basis of an Alaska Native diabetes registry for the Indian Health Service. Diabetes prevalence rates vary significantly among the various ethnic groups within the Native population, from a low of 13 per 1,000 among Eskimos to a high of 35 per 1,000 among Aleuts, with Indians at a rate of 26 per 1,000 (*Personal Communication with Karen Halderson, ANMC Diabetes Program, 7/96*). Rates appear to be highest in those groups having the longest contact with western lifestyles. Residents of St. Paul Island in the Pribilofs, have an extremely high prevalence rate of 98 per 1,000 (*Personal Communication with Karen Halderson, ANMC Diabetes Program, 7/96*), a rate significantly higher than the state or national prevalence.

Although the overall diabetes rate among Alaska Natives is low (21 per 1,000 population), the prevalence rate increased 33% in ten years, from 610 cases in 1985 to 1,124 cases in 1994 (*Personal Communication with Karen Halderson, ANMC Diabetes Program, 7/96*). Historically, diabetes has not been considered a problem for Alaska Natives; however, current data indicate this is no longer the case. Diabetes and its complications appear to be an increasing problem for this group.

Studies by Schraer (1988) and Middaugh (1991) found that complication rates among people with diabetes in Alaska are as high as those of the total US population. Complications from diabetes are serious, common, and costly. Cardiovascular disease is a leading complication in diabetes and the leading cause of premature mortality among people with diabetes. About 60-70% of people with diabetes have mild to severe forms of diabetic nerve damage (CDC, 1995). More than half of lower limb amputations in the United States occur among persons with diabetes. In addition, diabetes is the leading cause of blindness in persons aged 20-74 years, and the leading cause of end-stage renal disease accounting for 36% of all new cases (CDC, 1995).

In 1992, the medical costs (direct and indirect costs) associated with diabetes in the US was estimated to be 92 billion dollars (CDC, 1995).

Modifiable Risk Factors for Non-Insulin Dependent Diabetes Mellitus

Modifiable risk factors for diabetes include obesity and physical inactivity. Obesity is a *major* modifiable risk factor for the development of non-insulin dependent diabetes mellitus (NIDDM).

Nutrition-Related Risk Factors

Obesity is *the* nutrition-related risk factor associated with NIDDM. Additionally, hypertension ($\geq 140/90$ mm Hg) is a nutrition-related risk factor for the development of heart attack and stroke complications from diabetes (APHA, 1993).

Nutrition-Related Risk Factor: Obesity

Obesity is the result of consuming too many calories in relation to the calories expended by an individual. Approximately 80% of people with NIDDM are obese at the time of diagnosis, and it has been estimated that half of all NIDDM may be preventable by controlling obesity (McGinnis, 1993). Furthermore, 30% of diabetes deaths may be diet-related (McGinnis, 1993). As with CHD, the distribution of body fat, independent of obesity, is a risk factor for NIDDM according to several studies. Fat deposited in the abdominal area puts an individual at increased risk over an individual with fat deposited in the hips and thighs. Among persons with diabetes in Alaska, 49% were obese (based on body mass index, see next page for definition) and 62% reported a sedentary lifestyle (BRFSS, 1991-1994).

Nutrition-Related Risk Factor: Hypertension

Approximately two-thirds of individuals with diabetes have hypertension (CDC, 1995). Hypertension exacerbates diabetes complications by adding to small vessel damage and it may be responsible for 30-75% of diabetic complications (Diabetes Care, 1993); it is a major contributor to morbidity and mortality in diabetes. Among persons with diabetes in Alaska, 54% reported hypertension (BRFSS 1991-1994).

Nutrition-Related Morbidity

Obesity

Obesity is the result of consuming too many calories in relation to the calories expended by an individual. The possible causes include genetics, overeating, physical inactivity, and metabolic defects (US DHHS, 1988). The results of many studies show that mortality increases with increasing body weight (APHA, 1993). Furthermore, the risk of diseases such as heart disease (CHD), diabetes, and cancer increases as relative weight increases (APHA, 1993). See Appendix J for an illustration of healthy weight for height ranges and Appendix K for weight ranges based on body mass index (BMI).

Two measures of obesity are:

- 1) a body weight greater than 120% of desirable weight for height
- 2) a body mass index (BMI) greater than 27.8 in men or 27.3 in women (BMI is a ratio of weight to height (kg/m^2) (Kuczmarski, 1994)

Based on body mass index, approximately 58 million adults in the US are obese (about 26 million men and 32 million women), and the prevalence of obesity in the United States is increasing, affecting about one in three adults (Kuczmarski, 1994). This represents an eight percent increase from the late seventies and early to mid eighties according to the National Health and Nutrition Examination Surveys (NHANES) (Kuczmarski, 1994). All ages, races, and sex groups exhibited an increase in the prevalence of overweight (based on BMI) from the NHANES II (1976-1980) to NHANES III (1988-1991). Mean body weight increased 3.6 kg or about 8 pounds for adult men and women aged 20-74 years (Kuczmarski, 1994). In Alaska, 28% of adults age 18 years and older were overweight based on BMI during 1994 (personal communication with P Owen, AK DHSS, 1996).



Hypertension

Hypertension is defined as a systolic blood pressure of 140 mm Hg or greater and/or a diastolic blood pressure of 90 mm Hg or greater (APHA, 1993). Among Alaskan adults, 17% reported they had been told their blood pressure was high (BRFSS, 1995). This equates to approximately 65,000 people. The American Heart Association estimates that nearly one-third of the adult population in the United States has high blood pressure.



The cause of hypertension is unknown in most people (APHA, 1993). Modifiable risk factors include obesity, high alcohol intake, a diet high in sodium, and physical inactivity (APHA, 1993). Being overweight increases the risk of developing high blood pressure two to six times (NCEP, 1992). The risk of coronary heart disease increases as levels of blood pressure rise,

and diabetes complications are exacerbated in people with hypertension. Maintaining desirable body weight and moderating sodium and alcohol intake can lower blood pressure in those with mild to moderate hypertension, and reduce the need for medications (US DHHS, 1988). Like diabetes, once hypertension develops there is no cure; it must be controlled for the rest of one's life.

Osteoporosis

Osteoporosis is a disease characterized by a loss of bone mineral density and mainly affects women. The nutrition-related risk for development of this disease is inadequate nutrient intake (primarily calcium) during the teen years and early twenties when bone mass is reaching its peak. Dietary calcium has its greatest effect during young adulthood and a somewhat smaller effect post-menopause (Wardlaw, 1993). Besides inadequate calcium intake early in life, other modifiable risk factors for osteoporosis include immobility, alcohol use, use of corticosteroids, lack of estrogen replacement therapy and possibly cigarette smoking (APHA, 1993).

Osteoporosis is not a leading cause of death in the US; it is, however, a leading cause of morbidity, especially among women. It affects up to 25 million individuals aged 45 years and older (Wardlaw, 1993), the risk increasing with age. The prevalence of osteoporosis and related fractures is much higher in white women than in black women. The majority of white women are at risk for fractures related to osteoporosis, especially in the wrist, spine, and hip. By the age of 75, nearly all white women have bone mineral density values below the fracture threshold for hip fractures (Wardlaw, 1993). There are about 1.5 million osteoporosis-related fractures in the US each year (Wardlaw, 1993). Health care expenditures associated with osteoporosis measure into the billions of dollars annually.



Section III:

Present Nutrition Status in Alaska

Nutrition Surveillance

The report of the United Nations Expert Committee on Methodology of Nutrition Surveillance (as cited by Habicht, Lane and McDowell, 1986) states that, "Surveillance should provide on-going information about the nutritional conditions of the population and the factors that influence them. This information will provide a basis for decisions to be made by those responsible for policy, planning, and the management of programs relating to improvement of food consumption patterns and nutrition status". In its strictest sense, "surveillance indicates activities directed to the early detection of community nutritional problems so that they can be quickly corrected" (Habicht, 1986).

From the previously cited United Nations report, the summarized objectives of nutrition surveillance are:

- to describe the nutrition status of a population or defined sub-group identified as being at risk;
- to provide data that will contribute to the analysis of causes of a problem or condition;
- to promote decision making and problem prioritization by governments;
- to assess trends that enable predictions made to indicate the probable evolution of nutrition problems; and
- to monitor nutrition programs and to evaluate their effectiveness.

Nutrition surveillance in its broadest sense has three components: assessment, monitoring, and surveillance (in a restricted sense) (Habicht, 1986). The three components require that a baseline be determined for variables that are to be considered; monitoring and surveillance also require identification of any significant change in those variables (Habicht, 1986). *Assessment* includes the measurement and description of a population's nutritional status; *monitoring* measures changes over time and requires repeated assessments at regular intervals; *surveillance* includes activities directed to the early detection of problems so they can be corrected quickly. Data should be produced by ongoing health programs themselves, and not as the result of a separate enterprise in and of itself (Habicht, 1986).

Statewide nutrition-related surveillance activities (assessment, monitoring, and surveillance) in Alaska include:

Behavioral Risk Factor Surveillance System (1991-present) — A statewide random sample telephone survey of adults 18 years and older. Data are self-reported. Nutrition-related data include height, weight, fruit and vegetable consumption, cholesterol screening, and physical activity.

Youth Risk Behavior Survey (1995) — A random sample survey of public middle and high school students. Nutrition-related data include perception of body weight, eating patterns, dieting practices, and physical activity patterns.

Pediatric Nutrition Surveillance System (PedNSS) and Pregnancy Nutrition Surveillance System (PNSS) (1991-1996) — Statewide data are collected from participants of the Women's, Infants and Children's (WIC) program. Nutrition-related data for PedNSS include short stature, underweight, overweight, low birth weight, low hemoglobin, and for PNSS include prenatal weight gain, low hemoglobin, premature births, low and high birth weights, smoking, drinking, postpartum weight and breast-feeding status (PNSS). These data are currently used to monitor the Alaska WIC nutrition program statewide, and to evaluate its effectiveness.

In addition to these activities, the Alaska Area Native Health Service has participated in an Indian Health Service-wide study on the heights and weights of American Indian/Alaska Native school children.

Alaskans at Risk

The availability of data on Alaskans at risk of nutrition-related chronic disease is limited. This section reviews the available information.

Behavioral Risk Factor Surveillance System (BRFSS)

Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is a national survey developed by the Centers for Disease Control and Prevention. The survey was implemented by the Alaska Department of Health and Social Services during late 1990. Data about the lifestyle and health habits of Alaskan adults (aged 18 and older) is collected monthly via a random telephone survey and compiled annually for a total sample size of 1,536. All information from the BRFSS is self-reported. The Alaska sample is stratified into four regions. Data are weighted so that reported prevalence estimates (%) are representative of the state's adult population.

During 1994, 66% of Alaskan adults rated their own health to be excellent or good (*Personal Communication with P. Owen, AK DHSS, 1996*). Survey results show, however, that only 19% ate at least five daily servings of fruits and vegetables, and only 25% engaged in regular physical activity. Table 6 provides summary information

regarding these and other nutrition-related health indices among Alaskans.

**Table 6. Behavioral Risk Factor Surveillance System (BRFSS):
Estimated prevalence for relevant risk factors and health indicators
among Alaskan adults 18 years and older**

Risk Factor/ Health Indicator	Men	Women	Total	National Median
Overweight (1994) (based on percent of median)	34%	31%	33%	34%
Overweight (1994) See Appendices L and M (based on Body Mass index)	30%	26%	28%	27%
Hypertension (1993) (ever told by a doctor that blood pressure was high)	15%	20%	17%	22%
Cholesterol screening (1993) (screened within the past five years)	61%	63%	62%	65%
High Cholesterol (1993) (ever told by a doctor that cholesterol was high)	18%	19%	18%	19%
Diabetes (1994) (ever told by a doctor that they have diabetes)	3%	3%	3%	4%
Consume 5 or more servings of fruits and vegetables per day (1994)	17%	21%	19%	22%
Over 75th percentile for dietary fat consumption (1992)	34%	15%	25%	N/A
Trying to lose weight (1994)	26%	45%	35%	N/A
Controlling weight (1994) (no leisure time physical activity or physical activity less than 3 times per week or less than 20 minutes per session)	38%	51%	44%	39%
Sedentary lifestyle (1994) (no leisure time physical activity or physical activity less than 3 times per week or less than 20 minutes per session)	46%	51%	48%	58%
No leisure time physical activity (1994)	22%	24%	23%	29%
Engage in regular and sustained physical activity (1994) (3 times per week and 20 minutes per session, <50% capacity)	30%	26%	28%	20%
Engage in regular and vigorous physical activity (1994) (3 times per week and 20 minutes per session, >50% capacity)	15%	15%	15%	14%

% = This is a statistically weighted percentage adjusted to compensate for the over- or under-representation of various subgroups in the survey sample, rounded up to the nearest whole number, of the adult population in this demographic subgroup, based on survey data.

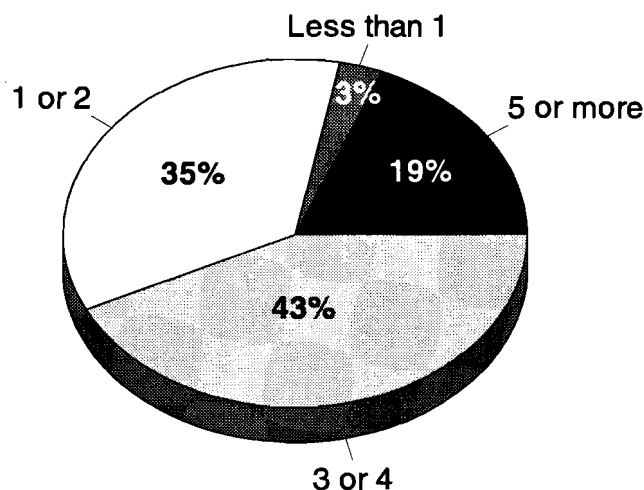
Eating Patterns

Fruit and Vegetable Consumption

BRFSS survey results for 1994 indicate that only 19% of Alaskan adults consumed five or more servings of fruits and vegetables per day, compared to the national BRFSS median of 22%. More females than males (21% vs. 17%) consumed fruits and vegetables five or more times per day. Among Alaskan adults, about 3% ate less than one serving of fruits and vegetables a day, 35% ate one to two servings daily, and 43% ate three to four servings daily (*Personal Communication with P. Owen, AK DHSS, 1996*). Appendices N and O provide more detailed information on fruit and vegetable consumption among Alaskan adults.



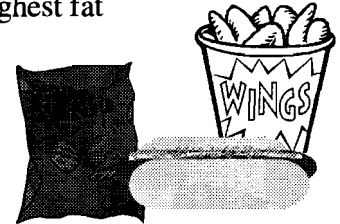
Figure 3.
**Daily servings of fruits and vegetables
consumed by Alaskan adults, BRFSS, 1994**



Among the Alaska Native/American Indian population, 20% reported consuming five or more servings of fruits and vegetables per day, while 18% of the white population reported consuming five or more a day during 1994. Among the Alaska Native/American Indian population, 9% ate less than one serving of fruits and vegetables a day, 35% ate one to two servings a day, and 37% ate three to four servings a day. Among the white population, 3% ate less than one serving of fruits and vegetables a day, 35% ate one to two servings a day, and 44% ate three to four servings a day (*Personal Communication with P. Owen, AK DHSS, 1996*).

Dietary Fat Consumption

Alaskan males were the highest fat consumers during 1992; 34% of Alaskan adult males were over the 75th percentile for dietary fat intake, compared to 15% of Alaskan adult females that were over the 75th percentile (BRFSS, 1993). The usefulness of this data is limited, however, because it does not quantify the actual amount of fat people consumed. Respondents were asked how often they ate certain foods considered high in fat such as potato chips, hot dogs, and fried chicken. The highest fat consumers could thus be identified based on the frequency they reported, but there is no way to determine how much fat they actually ate. See Appendix P for a summary index of dietary fat by age and sex and Appendix Q for adult dietary fat eating patterns.



Youth Risk Behavior Survey (YRBS)

Youth Risk Behavior Survey (YRBS)

The Youth Risk Behavior Survey (YRBS) is a national survey developed by the Division of Adolescent and School Health, Centers for Disease Control and Prevention (CDC) in collaboration with 71 state and local departments of education and 19 federal agencies. The survey is a component of a larger national effort to assess priority health risk behaviors that contribute to the leading causes of mortality, morbidity, and social problems among youth and adults in the United States. The Alaska Department of Health and Social Services and the Alaska Department of Education jointly supported implementation of the YRBS in Alaska during 1995. A total of 1,634 students from 31 high schools and 1,265 students from 32 middle schools participated. The sample was statistically representative of all schools in Alaska which met survey criteria. The self-reported data can be generalized to the population of public school students in grades 7-8 and 9-12 throughout Alaska (YRBS, 1996).

During 1995, about 49% of high school students and 52% of middle school students reported eating no cooked vegetable on the day prior to being surveyed. Only 30% of high school girls and 37% of high school boys reported eating five or more servings of fruits and vegetables on the day prior to being surveyed.

Table 7 and Table 8 provide summary information from the *Weight and Dietary Behaviors* and *Physical Activity* sections of the Youth Risk Behavior Survey.



Table 7. Alaska Youth Risk Behavior Survey: Summary results for high school students (grades 9-12), 1995

<i>Percent of Students who:</i>	Boys		Girls	
	Alaska	US	Alaska	US
Ate five or more servings of fruit and vegetables on previous day	37	33	30	23
Ate no more than 2 servings of foods typically high in fat on previous day	58	50	80	72
Thought they were overweight	20	22	38	34
Were attempting weight loss*	24	24	60	60
Took laxatives or vomited to lose weight*	2	2	8	8
Took diet pills to lose or keep from gaining weight*	2	2	7	9
Dieted to lose or keep from gaining weight*	15	16	42	48
Exercised to lose or keep from gaining weight*	45	39	69	64
Participated in vigorous physical activity**	78	74	66	52
Participated in moderate physical activity***	44	36	41	35
Enrolled in physical education class in 12 months prior to the survey	55	62	47	57
Played on a school sports team in 12 months prior to the survey	54	58	48	42

* During the 30 days prior to being surveyed

** Exercised or participated in sports activities for at least 20 minutes that caused sweating and heavy breathing on 3 or more of past 7 days

*** Walked or bicycled for at least 30 minutes on 3 or more of past 7 days

Table 8. Alaska Youth Risk Behavior Survey: Summary results for middle school students (grades 7-8), 1995

<i>Percent of Students who:</i>	Boys	Girls
Thought they were overweight	23	34
Were trying to lose weight	31	58
Ever took laxatives or vomited to lose weight	4	12
Ever took diet pills to lose or keep from gaining weight	3	15
Ever dieted to lose or keep from gaining weight	21	50
Ever exercised to lose or keep from gaining weight	51	74
Ate fruit at least once on the previous day	74	77
Drank fruit juice at least once on the previous day	76	70
Ate cooked vegetables at least once on the previous day	49	49
Ate hamburger, hot dog or sausage one or more times on previous day	50	37
Ate french fries or potato chips one or more times on previous day	58	46
Ate cookies, doughnuts, pie or cake one or more times on previous day	58	50
Exercised or played sports at least 3 of past 7 days*	87	82
Attended physical education class one more days during the week	85	85
Played on a sports team run by school or other organization	67	58

*Such as basketball, soccer, running, swimming laps, tennis or fast bicycling

*Eat a variety of foods in
moderation—*

Your mother.

Nutrition Guidance and Recommendations for the Public's Health

Dietary Guidelines for Americans and the Food Guide Pyramid

The Dietary Guidelines for Americans are the US government's guidelines for nutrition programs and policies for healthy Americans age two years and over. The Guidelines are revised every five years; the 1995 edition was released to the public on January 2, 1996. This was the fourth edition of the guidelines since their initial publication in 1980.

Food choices depend on history, culture, and environment, as well as on energy and nutrient needs. People also eat foods for enjoyment. Family, friends, and beliefs influence the ways people select foods and plan meals. The Dietary Guidelines are designed to help Americans choose foods that will meet these needs and meet their nutrient needs, promote health, support active lives, and reduce the risk of chronic diseases (USDA, 1995).

Healthful diets have the amounts of essential nutrients and calories required to prevent nutritional deficiencies and excesses. Healthful diets also provide the right balance of carbohydrate, fat, and protein to reduce chronic disease risk, and to support a full and productive lifestyle. A variety of foods that are available, affordable, and enjoyable are part of a healthful diet (USDA, 1996).

Dietary Guidelines for Americans, 1995

Eat a variety of foods

Balance the food you eat with physical activity — maintain or improve your current weight.

Choose a diet with plenty of grain products, vegetables, and fruits.

Choose a diet low in fat, saturated fat, and cholesterol.

Choose a diet moderate in sugars.

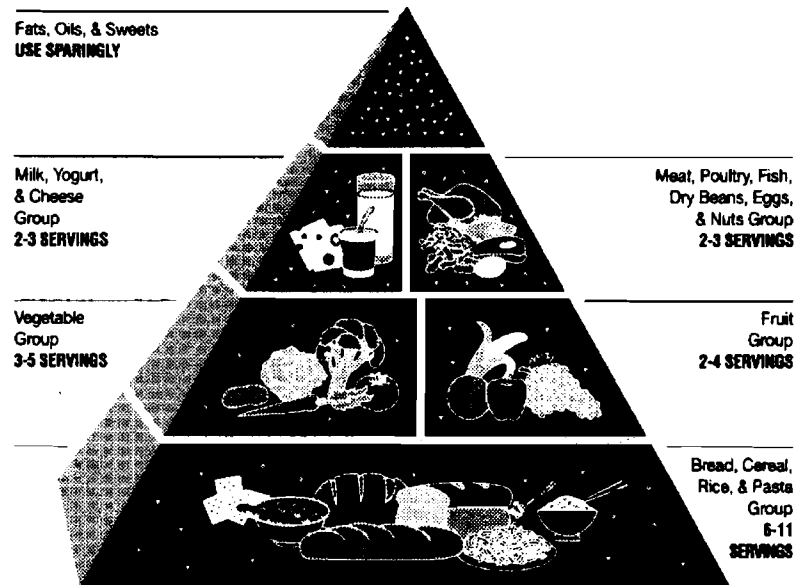
Choose a diet moderate in salt and sodium.

If you drink alcoholic beverages, do so in moderation.

During 1992, the Food Guide Pyramid was released to the public to help Americans put the Dietary Guidelines into practice. The pyramid defines five food groups compared with the "old" basic four; the pyramid gives basic guidance for the number of servings from each food group that people should eat for good health. Current recommendations are to consume at least six servings of grain products; three servings of vegetables; two servings of fruits; two servings of dairy products, and two servings of

meat, beans, eggs or fish a day (USDA, 1995). Variations of the pyramid have been developed within Alaska illustrating foods common to the Alaska Native population. See Appendix R for the Food Guide Pyramid and Appendix S for Alaska's Food Guide Pyramid.

Food Guide Pyramid A Guide to Daily Food Choices



Source: U.S. Department of Agriculture/U.S. Department of Health and Human Services

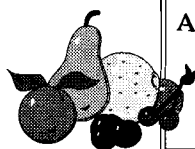
5 A Day for Better Health



The 5 A Day for Better Health Program is one of the most extensive nutrition campaigns in the United States. The program encourages Americans to eat at least 5 servings of fruits and vegetables daily, the minimum number recommended by the Food Guide Pyramid. The program also provides information on how people can put the recommendation into practice; it is jointly sponsored by the National Cancer Institute and the Produce for Better Health Foundation.

Vegetables and fruits are the main sources of vitamins A and C in the diet, and are good sources of dietary fiber. Eating 5 fruits and vegetables daily is associated with reduced risk of chronic diseases such as cancer, heart disease, and stroke.

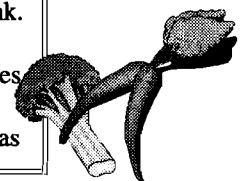
The Alaska Department of Health and Social Services is licensed by the National Cancer Institute to administer the 5 A Day Program in Alaska. Statewide community-based activities are being implemented to promote the 5 A Day message throughout the state. Many activities and media coverage take place during the second week of September, which has been identified as National 5 A Day Week.



One serving of fruit or vegetable is not as much as many people think.
A serving equals:

1 medium piece of fruit
3/4 cup 100% juice
1/4 cup dried fruit

1/2 cup raw or cooked vegetables
1 cup raw leafy vegetables
1/2 cup cooked beans or dry peas





Public Awareness, Understanding, and Acceptance of Healthful Eating Patterns

Extensive changes in eating patterns have occurred over the century, including marked increases in eating away from home and snacking. Dieting to lose weight is practiced by many people, especially females. The diet industry earns billions of dollars annually from consumers trying to lose weight. Deviations from recommended dietary guidelines have persisted, and in some instances increased, despite the overall growth in the variety of commonly available food, improved transportation and storage of fresh foods, increased disposable income, and greater public and professional knowledge about the relationship of nutrition to good health.

Food Knowledge, Attitudes and Behaviors

During 1993, the American Dietetic Association conducted a *Survey of American Dietary Habits* (ADA, 1994). Results of the study showed that people are aware of the need to improve their diets, but most do not have the knowledge to do it. For example, many people claim they monitor their consumption of fat and cholesterol, yet only 6 percent of the people could correctly state the guideline for fat intake and virtually none could identify the guideline for cholesterol. Most Americans (81%) recognize that good nutrition is important, and they are concerned about their diet in relation to general health maintenance. Unfortunately, the study also showed that Americans are doing less now than they were during 1991 to improve their diet—fewer are “doing all they can” to improve what they eat and fewer report being highly careful in selecting food to achieve a healthful diet. Barriers to better eating included people believing they had to give up foods they liked to achieve a healthful diet, and people feeling confused by conflicting information about what is “good” for them.

Some of what is known about Alaskans’ eating behaviors comes from the Alaska Behavioral Risk Factor Surveillance System (BRFSS). During 1994, BRFSS survey participants were asked, “When you are at the store, how often do you choose foods labeled as lower in fat? (such as low fat milk, lean hamburger, or tuna canned in water)?” The majority of respondents reported choosing these foods at least some of the time (66%). Table 9 provides summary data for this question.

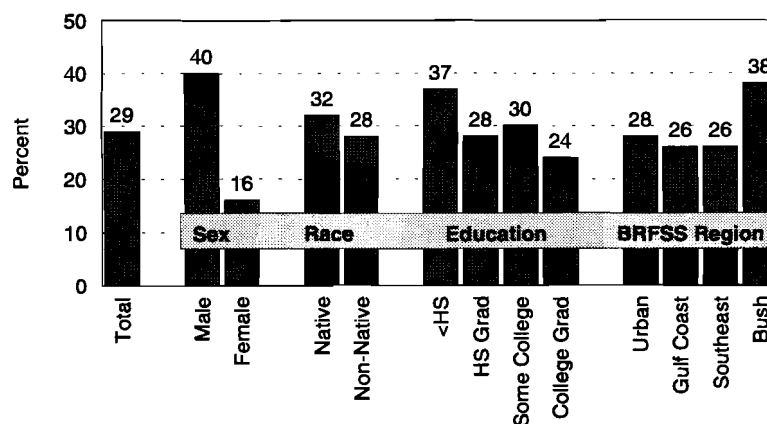
Table 9. Behaviors related to choosing foods labeled lower in fat, summary of adults in Alaska by selected variables, Alaska BRFSS 1994

Variable	Always or Nearly Always	Sometimes	Seldom or Never	Don't Have a Choice/buy What's Available	Never Shop in Stores/Not Principal Shopper
All Adults	46%	20%	29%	1%	4%
GENDER					
Men	35%	18%	40%	1%	6%
Women	59%	22%	16%	1%	2%
RACE					
Alaska Natives	33%	26%	32%	4%	5%
Non-Natives	48%	20%	28%	<1%	4%
EDUCATION					
<HS Education	33%	25%	37%	2%	3%
HS Grad/GED	40%	26%	28%	1%	4%
Some College/Tech School	49%	15%	30%	<1%	6%
College Graduate	54%	20%	24%	<1%	3%
BRFSS REGION					
Urban	48%	20%	28%	1%	4%
Gulf Coast	49%	17%	26%	1%	7%
Southeast	48%	23%	26%	<1%	3%
Bush	27%	25%	38%	3%	6%

Figure 4 illustrates the percent of adults, by selected demographic factors, who seldom or never choose foods labeled lower in fat. Men, those living in the bush and those who did not finish high school, were least likely to choose the lower fat foods.

Figure 4.

Percent of adults who seldom or never chose foods labeled lower in fat, by selected demographic factors, BRFSS, 1994

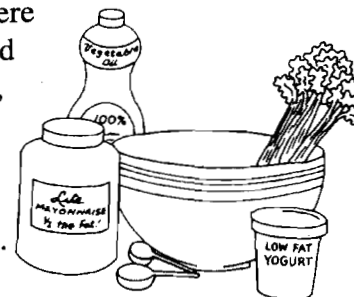


BRFSS survey results also show that few Alaskan adults eat the recommended five servings of fruits and vegetables each day. This may be related to the fact that people are unaware of how much they should be eating. An August 1995 statewide random sample telephone survey found that only 30% of adults thought they should eat at least 5 servings of fruits and vegetables for good health while about 40% thought that only two or three servings a day were enough, and 15% thought that four servings were enough (Dittman, 1995). Following an eight-month statewide 5 A Day social marketing campaign, from September 1995 through April 1996, a follow-up survey found that knowledge regarding the 5 A Day recommendation had improved. Approximately 43% of adults thought they should eat five for more fruit and vegetables servings a day for good health following the campaign (Hellenthal, 1996) compared to 30% before the campaign. There is no research available at this time to indicate whether people are putting this knowledge into action.

The results of 11 focus groups conducted in six labor market regions of Alaska during March and April 1995 also showed that participants were not aware of the recommendation to eat 5 servings each day, and that they did not have a good understanding of serving sizes (AK DHSS, 1996). The major barriers reported by participants to consuming more fruits and vegetables, were taste, cost, quality of fresh produce, and time required for preparation. Participants indicated that food demonstrations in grocery stores, having quick and easy recipes that taste good, and availability of pre-prepared items would help them to increase their and their families' consumption of fruits and vegetables.

Food Consumption Patterns and Trends

During this century in the United States there have been noticeable changes in per capita availability of foods, in eating patterns, and in chronic disease trends. Although average per capita availability of calories does not appear to have varied substantially since 1909, the percentage of total calories from fat in this period increased by 11%, while calories from carbohydrates decreased (NRC, 1992). Since the 1960's, the per capita supply of fat has steadily increased, but changes have occurred in the sources and therefore the types of fat available. There has been a decline in the use of whole milk, butter and lard and an increased use of low-fat milk, whole-milk cheeses, margarine, and salad and cooking oils. Most of these changes have resulted in increased per capita availability of polyunsaturated and monounsaturated fatty acids, trans fatty acids, and a decreased supply of saturated fatty acids.



Although better-educated, higher-income people appear to be altering their diets in the directions advocated by public health experts, national surveys and other studies indicate that intakes of total fats and saturated fats are generally higher than recommended (NRC, 1992).

White bread is by far the favorite kind of bread, and sweet baked products such as cookies and cakes are very popular. Carbonated soft drinks containing either caloric or non-caloric sweeteners are consumed in large amounts. During the past two decades, consumption of milk has declined while soft drink consumption has increased significantly (NRC, 1992).



Results from the *Continuing Survey of Food Intakes by Individuals* (Tippett, 1995) show that between 1977-78 and 1989-91, intake of fluid milk declined by 12% the intake of carbonated beverages increased 72%. Fruits, vegetables, and other foods high in dietary fiber are consumed in less-than-recommended amounts, and consumption increased only slightly between 1977-78 and 1989-91, despite advice to eat more (Tippett, 1995). Consumption of cruciferous vegetables such as cabbage, brussel sprouts, broccoli, and cauliflower is low, as are intakes of carotenoid-containing foods such as carrots, sweet potatoes, and winter squash (NRC, 1992).

From 1989-91, the average intake of cholesterol in the US was 270 mg — 345 mg for men 20 and over and 231 mg for women of the same age. Average sodium intake was 3,074 mg — 3,891 for men 20 and over and 2,489 for women of the same age (Tippett, 1995). In 1989-91 Americans ate more mixtures that were mainly meat, poultry or fish, and fewer separate cuts of beef and pork, and ate fewer eggs than in 1977-78 (Tippett, 1995).

Food consumption information about residents of Alaska is very limited. The most extensive food consumption research available is on the Alaska Native population. A 1987-1988 study (Nobmann, 1992) showed that Alaska Natives consumed more calories, protein, fat, carbohydrate, iron, vitamin A and vitamin C, but less calcium than did the general US adult population; they consumed six times more fish but less fruits and vegetables. The Behavioral Risk Factor Surveillance System (BRFSS) provides the only population-based food consumption data for Alaska. BRFSS results indicate that most adults in Alaska consume three or four servings of fruits and vegetables each day, with men eating fewer servings than women, and that males aged 25-34 years appear to be the highest consumers of fat (BRFSS, 1994).

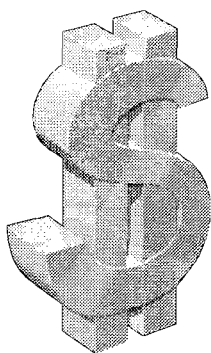
Environmental Factors Influencing Healthful Eating Patterns

Environmental factors which impact eating patterns include physical access to a variety of foods, legislation and regulation concerning food and nutrition, nutrition messages disseminated through the media, and nutrition education strategies presented to the public.

Access to Food

Physical access to food and the cost of food are primary factors influencing eating patterns. For example, people cannot choose fruit juice from a vending machine that is stocked only with carbonated soft drinks, and it is cost prohibitive to regularly purchase apples that cost \$4 per pound in a village store. Fast food outlets, some full-service restaurants, snack bars, vending machines, and many village stores in Alaska are examples of settings where healthful foods, such as fresh fruits and vegetables and low-fat dairy products, are often in short supply, or are too expensive to purchase on a regular basis.

Cost of Food at Home for a Week in Alaska



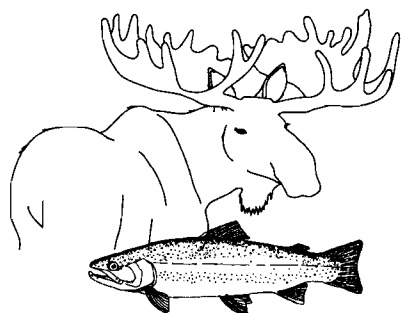
Under the United States Department of Agriculture (USDA), the Alaska Cooperative Extension surveys approximately 20 communities during the months of March, June, September and December each year to determine the cost of food to feed a family of four at home in Alaska. According to survey results, Anchorage usually has the lowest food cost of the communities surveyed and is used as the basis for comparison for food prices in Alaska; in contrast, Dillingham and Tanana have the highest food cost of the regularly surveyed communities (UAF, 1995). Food costs during March 1996 were approximately \$95, \$165 and \$193 per week for a family of four, for Anchorage, Dillingham (Southwest labor market region) and Tanana (Interior labor market region), respectively (UAF, 1996). The cost of food is very high in the small villages of Alaska. For example, food for a week for a family of four in the village of Golovin, outside of Nome (Northern Labor Market Region), cost approximately \$215 according to the March 1996 survey.

The cost of food in communities outside of Anchorage varies widely, depending upon factors such as the geographical location of the community and whether or not the community has sales tax. Anchorage does not have a sales tax. During the early 1990's in Anchorage, the weekly food cost for a family of four with elementary school children was approximately \$100. When Fred Meyer opened a store in Anchorage during December 1993, the cost to feed a family of four dropped to about

\$90. Costs have stayed in the \$90 range through at least March 1996. The same type of drop in food costs happened when Fred Meyer opened a store in Fairbanks. Competition is good for consumers' pocketbooks.

Income level and the cost of food have an impact on a person's food buying power. When income is low and the cost of food is high, buying power is decreased. Increased buying power, however, does not necessarily equate with more healthful eating patterns. The chronic diseases reviewed elsewhere in this document are often called diseases of affluence because they are associated, in part, with the excess consumption of high cost foods such as high-fat cuts of meat, cheeses, pastries, sweets and snack foods.

Subsistence



Traditional subsistence foods used among the Alaska Native population include fish, sea mammals, game, plants such as seaweed, willow leaves and sourdock, and wild berries (Nobmann, 1992). Use of many of these foods continues today, as in the past, but is supplemented by significant amounts of commercial and processed foods (Nobmann, 1992). For example, the most commonly consumed meat in 46 dietary recalls of village WIC participants aged one to five in the Aleutian Islands was bologna (Smith, 1996). Although the traditional Alaska Native diet was not a plant-based diet, berries, wild greens and roots were collected and eaten by this group of peoples. These plant foods would provide necessary vitamins, minerals, and fiber in the diet.

Consumption of fruits and vegetables among the Native population has been found to be infrequent and fiber content of the diet low (Nobmann, 1992). Respondents in one dietary study among Alaska Natives were found to consume an average of only two servings of fruits and vegetables a day (Nobmann, 1992). More recent data from the Behavioral Risk Factor Surveillance System indicate nearly 45% of Alaska Native adults eat no more than two servings a day (1994 BRFSS).

Subsistence foods are nutritious foods that can be obtained with little to moderate cost to the consumer. Game meats, for example, are low in fat, and seal oil is high in vitamin A. The heavy physical activity once associated with obtaining subsistence foods was also an important part of a healthful lifestyle. Today, however, the 20th century technology of snow machines, four wheelers, and boat motors conserves human energy; a possible consequence is an increased prevalence of obesity among Alaska Natives (Nobmann, 1992).

As summarized by Nobmann (1992), Alaska has no main agricultural crops and experiences a short growing season. What people eat in rural areas depends mainly upon subsistence and foods available in village stores. Because many communities in the state are not connected by roads, food must be shipped by air or water. This is

expensive, even with postal service subsidies. The cost is passed on to the consumer. Location of the village, weather conditions, storage requirements, purchase price and shipping costs affect the variety and quality of foods that may be purchased in remote areas of the state. The availability of fresh fruits and vegetables is greatly impacted by these variables.

Distribution of Grocery Stores and Restaurants

Americans are eating more meals away from home than ever before, and they are spending more of their food dollar — about 40% — on these meals (IOM, 1991). According to the National Restaurant Association (NRA), the average US consumer eats about four meals per week away from home, skips about three meals each week, and eats 14 meals per week from their home (*Personal Communication with R. Bien, NRA, 5/96*). From vending machines to grocery stores to full-service restaurants, ready-to-consume foods are virtually everywhere.

Eating in a way that meets the dietary guidelines can be difficult, especially for people who must purchase meals away from home, or who must rely on small rural and village stores for their groceries.

Compared with more urban areas of the state and with the number of grocery stores and markets in each region, there is a relatively high proportion of convenience stores in the Interior, Northern and Southwest labor market regions. The Alaska Department of Environmental Conservation defines a convenience store as a “small retail store with limited inventory of mainly prepackaged items; e.g. a small village store which sells chips, canned soda, candy and packaged ice cream....” Items such as fruits and vegetables, especially fresh, are usually not widely available in these types of food establishments, which are typically the only retail outlets in rural communities and villages.

Grocers and restaurateurs could provide a service to their local community by offering healthful choices and stocking as great a variety of nutritious foods as possible. More canned, frozen, and dried fruits and vegetables, for example, could be stocked at more reasonable prices in village stores as an alternative to fresh. Table 10 provides an overview of the number and types of retail food outlets in Alaska by labor market region. Definitions of the categories can be found in Appendix V.



Table 10. Number of retail food outlets in Alaska by labor market region

	Anchorage/ Mat-Su	Gulf-Coast	Interior	Northern	Southeast	Southwest
Supermarket	6	7	4	3	12	3
Grocery Store*	42					
Market with Food Service	1	7	5	3	15	6
Market without Food Service	37	10	20	41	15	18
Convenience Store*	91					
Convenience Store with Food Service	20	34	22	4	18	2
Convenience Store without Food Service	23	60	127	39	25	177
Restaurant	685	178	107	24	189	90
Institutional (School or church) Kitchen	215	97	57	57	107	97
Snack Bar* (with or without food prep)	96					
Limited/Mobile Food Service	164	73	64	7	90	22
Roadhouse	--	--	4	--	--	--
Food Service Associated with Bar	129	92	53	2	2	14

* Municipality of Anchorage category, which differs from Alaska Department of Environmental Conservation definitions.

Source: Alaska Dept. of Environmental Conservation, 1996
Municipality of Anchorage, Environmental Health Services, 1996

US Postal Services

Many people living in rural Alaska periodically travel to Anchorage, Fairbanks, or other urban areas and make large food purchases. Even with the added cost of shipping it home, this is cheaper than buying food in rural stores, and people can purchase items not available in their communities. Shoppers often mail their shipments home, typically at fourth class rates, even though true fourth class service to many remote communities may be impossible due to the lack of a connected road system. Although packages are mailed fourth class, they are sent by air because that is the only available method of transportation. The cost of air transport is borne by the US Postal Service. This subsidy costs the postal service millions of dollars but saves residents of remote areas of the state significant amounts on their food bill.

Individuals are able to take advantage of this subsidy directly. Food wholesalers do it a little bit differently by using "by-pass mail." By-pass mail is volume fourth class

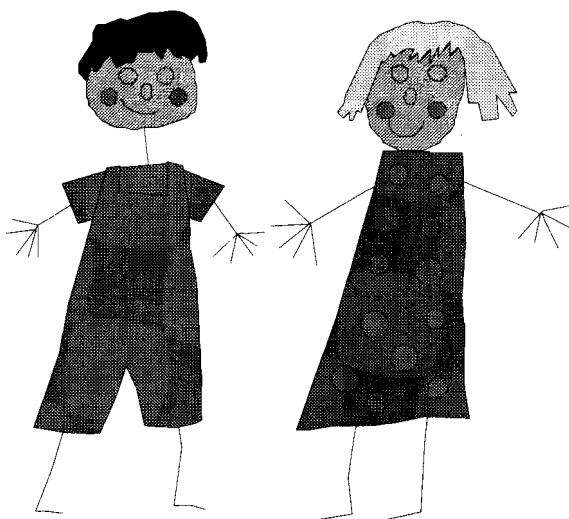
mail sent from Fairbanks or Anchorage to rural Alaska. The minimum shipment size is 1,000 pounds and there are postal service restrictions on what can be mailed; food is the primary good that is allowed. The term by-pass means that the sender — typically a large wholesaler — is by-passing the postal plant and taking their goods directly to the airline dock, on an appointment basis. This cuts down greatly on labor, transportation and other costs that would otherwise be incurred handling such large volumes of mail. About 80% of retailers in rural areas of Alaska obtain their goods through by-pass mail (*Personal Communication with R. Froemling, US Postal Service, 9/96*).

Recent Food and Nutrition Legislation and Regulation

National School Lunch and Breakfast Programs and Dietary Guidelines for Americans

Prior to July 1, 1996, school districts participating in the National School Lunch and School Breakfast Programs were required to meet the USDA meal pattern with no regulatory requirement to meet the Dietary Guidelines for Americans. Efforts to reduce the amount of fat and saturated fat in school meals was encouraged but voluntary. In 1993, USDA released the School Nutrition Dietary Assessment Study which presented the findings from a nationally representative study of the nutrient content of school meals. Of the 545 schools participating in this study, the school menus averaged 38% of calories from fat and 15% of calories from saturated fat.

As a result of these findings, coupled with the current recommendations from the Dietary Guidelines for Americans and the American Heart Association, beginning July 1996 sponsors participating in the National School Lunch and School Breakfast Programs must serve meals averaging 30% or less of calories from fat and 10% of calories from saturated fat over a week's time (Better Nutrition and Health for Children Act of 1994 — PL 103-448).



Food Labeling

The Food and Drug Administration regulates labeling of most food products except for meat and poultry products, which fall under the United States Department of Agriculture (USDA). In May 1994, new labeling requirements became law. Before that time, some food labeling was unclear, misleading, or absent, and consumers had the burden of sorting out information in an attempt to make informed food choices. A 1995 survey of consumers showed that only 43% were aware of the new food label, but that those who were aware were making changes because of the label's information (FMI, 1995).

Approximately 90% of processed food is now labeled (FDA, 1994). The information is provided on packaging under the heading of Nutrition Facts. Additionally, the USDA established a voluntary point-of-purchase nutrition information program for raw meat and poultry that went into effect in May 1994; it is voluntary so long as a sufficient number of retailers participate. Raw fruits, vegetables and fish fall under the voluntary point-of-purchase nutrition information program which has been in place since November 1991 (FDA, 1994).

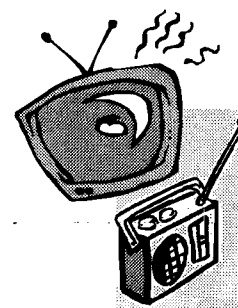
Food supplements, such as vitamins, minerals and herbal preparations, are nutrition-related products that are not covered under food labeling regulations. The production and sale of these items to the public is not regulated by any government agency at this time.

Figure 5. Nutrition Facts Label

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
Calories 260	Calories from Fat 120
% Daily Value*	
Total Fat 13g	20%
Saturated Fat 5g	25%
Cholesterol 30mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A 4%	Vitamin C 2%
Calcium 15%	Iron 4%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

The Mass Media and Nutrition

The media is a powerful influence and a principal source of information on food and nutrition for many people. According to a 1993 survey by the American Dietetic Association (ADA, 1994), the most common source of nutrition information among consumers is magazines followed in rank order by television/radio, food/lifestyle sections of the newspaper, books, doctors, and family/friends.



Organized campaigns to broadcast, explain, and promote healthful dietary recommendations through a variety of media offer great potential for improving eating patterns and can be a cost effective means to reach large numbers of people. Unfortunately, counter-messages are everywhere. Consider the following: on average, Americans have their television sets on for almost seven hours daily (AC Nielsen, 1991). A 1992 study by the Centers for Science in the Public Interest found that nine out of ten food ads on Saturday morning television are for sugared cereals and candy bars, salty canned foods, fatty fast foods, chips and similar foods. During 1993, the National Cancer Institute spent \$400,000 to promote its 5 A Day for Better Health campaign which encourages people to eat at least five servings of fruits and vegetables each day; whereas during 1992, Kellogg's spent \$13 million to promote Froot Loops cereal and \$34 million to promote Frosted Flakes (CSPI, 1994).

Media is being used increasingly as a part of social marketing programs. Social marketing programs use commercial marketing techniques to promote changes in behavior. There is a national need to enlist the media to help decrease consumer confusion in the area of nutrition. Effective use of the media could help increase consumer knowledge and skills, and help motivate and equip both children and adults to make health-promoting dietary choices.

During 1993, media outlets in Alaska included approximately 78 radio stations (28 of these stations were part of the Alaska Public Radio Network); 18 television stations and 24 cable, pay, or other TV services; and 36 newspapers, four of which were daily (AK DOE, 1993). There were also several magazines, tabloids, and other publications printed in the state.

During 1995, several major changes occurred in the operations and programming of some television stations in the state. For example, driven by cuts in state funding, the four public television stations located in Anchorage, Bethel, Fairbanks, and Juneau, formed a partnership and became *Alaska One*. KUAC in Fairbanks now provides programming to the two public television stations in Bethel and Juneau, and KAKM in Anchorage provides some programs to the Fairbanks station as a part of that system. The Rural Alaska Television Network (RATNET), which also lost state funding, was replaced by the Alaska Rural Communication System (ARCS) which operates out of Bethel. Finally, KIMO 13, the Anchorage ABC affiliate, began providing simultaneous broadcasts for the Fairbanks and Juneau affiliates. They also purchased new equipment which enabled them to provide ABC programming, formerly purchased from a Denver station, to local cable companies. The Anchorage station can service virtually any community statewide, from Barrow to Petersburg and Nome to Valdez, which will increase access to media for social marketing.

Nutrition Education

The most effective nutrition education interventions are behaviorally focused and based on prior research and appropriate theory (Contento, 1995).

Nutrition education is considered a major component of most health promotion and disease prevention programs. Schools, worksites, food service establishments, and grocery stores often integrate nutrition education into their services and programs (Contento, 1995). Educational strategies may include classroom instruction and activities, weight loss activities, dissemination of nutrition information through posters and brochures, provision of more health-promoting food choices accompanied by easily visible labeling, and altered shelf displays.

The most effective nutrition education interventions are behaviorally focused and based on prior research and appropriate theory (Contento, 1995). Examples of behaviors include those that relate to food, such as eating lower fat food; or to other nutrition concerns such as breast-feeding; or to the impact of dietary practices on the environment such as purchasing foods with minimal packaging (Contento, 1995). Nutrition education programs based upon mere dissemination of information and teaching of skills have not been very effective for changing behavior, unless used with groups that were already motivated to make a change (Contento, 1995). See Appendix T for a list of Elements Contributing to the Effectiveness of Nutrition Education Interventions.

Nutrition Education in the Classroom

Diet-related risk factors for chronic diseases can show up in early childhood. Fatty streaks in veins have been found in children as young as three years old. Several studies have shown that disease risk factors “track” during childhood. Simply correcting the problem later isn’t always the answer. A recent study found that being overweight in adolescence increases the risk of heart disease in adulthood, even if the weight is eventually lost (Must, 1992). Nutrition education programs in schools, therefore, are an important way to teach children to make healthful food choices that can help prevent chronic diseases later in life.

Eating habits that children develop during their school-age years influence their lifelong eating patterns, which in turn impacts their health. School-based nutrition education programs targeted towards very specific eating behaviors have shown promising results in regard to behavior and attitude changes of children and adolescents (Olson, 1989; Contento, 1995). For the best results, strategies that address increasing knowledge and changing attitudes and behaviors must begin in early childhood when eating habits and attitudes about food are being formed and early risk factors are being developed. Children should be provided with nutrition education that prepares them to make healthful food choices now and in the future. Indeed, one of the objectives in the *Healthy People 2000* and in *Healthy Alaskans 2000* is to increase to at least 75 % the proportion of schools that provide nutrition education

from preschool to twelfth grade, preferably as part of quality (also referred to as comprehensive) school health education.

“Quality school health education that is planned and sequential for students in kindergarten through 12th grade, and taught by educators trained to teach the subject, has been shown to be effective in preventing risk behaviors. Quality school health education addresses and integrates education, skills development, and motivation on a range of health problems and issues (e.g. nutrition, physical activity, use of tobacco and alcohol) at developmentally appropriate ages. The content of the education is determined locally by parents, school boards, and other members of the community (US DHHS, 1990).”



During 1992-93, there were 467 public schools and 237 private and denominational schools for a total of 704 schools in 54 different school districts throughout Alaska (AK DOE, 1994). Nutrition curriculum, like all other curricula in the state, is determined by local school boards with teachers having additional discretion on the amount of time which will be spent on any particular subject. No current data are available on the provision of nutrition education in grades K-12 in Alaska. It is reported that many schools throughout the state provide some level of nutrition education to students; however, minimum standards and an overall plan or coordination of current nutrition education efforts are lacking (*Personal Communication, H. Mehrkens, AK DOE, 1994*).

Nutrition Education in Worksites

Just as children spend many of their weekday hours in school, adults spend many hours at work. There is tremendous potential to influence eating behaviors in the work setting.

The State and Federal Governments are the largest employers of Alaskans. During 1994, the State employed about 21,600 individuals, while the Federal Government provided employment to approximately 19,000 individuals and an additional 20,000 uniformed military (figures represent annual averages including all types of workers). Among the top 100 private employers, Carr-Gottstein Foods was the largest during 1994 with 3,320 employees while the 100th largest employer had only 231 employees. According to a personal communication with John Boucher of the Alaska Department of Labor (4/96), out of 14,000 public and private firms, nearly 80% have less than ten employees. Most people, however, are employed by firms with more

than ten employees. The small number of businesses employing large numbers of people are logical targets for worksite wellness programs, since they can potentially reach the majority of those employed in Alaska.

A 1993 survey on worksite health promotion programs in Alaska showed that 24% of businesses surveyed offered some kind of health promotion program or activity (624 of 929 worksites surveyed responded) (AK DHSS, 1993). The top three reasons worksites offered programs were to improve employee morale, to reduce accidents on the job, and to reduce insurance costs. Personnel or human resource departments were usually responsible for directing health promotion activities; few businesses have formal worksite wellness programs. Nutrition-related programs were the least commonly offered programs in worksites and ranked last of the types of programs offered. The number of businesses that did offer nutrition-related programs offered the following types:

- 31 (nutrition education)
- 21 (weight management)
- 20 (cholesterol screening/education)
- 19 (blood pressure screening/education)

Of those respondents interested in receiving further training in program-related areas, nutrition ranked fifth, AFTER stress management, back care, smoking cessation, and physical activity and fitness programs.

The three most common reasons reported for the lack of worksite health promotion programs were lack of available funds, lack of personnel, and lack of time. See Appendix U for examples of low-cost nutrition activities for worksites.

Nutrition Education in Grocery Stores and Restaurants

Consumers obtain most if not all of their food from grocery stores and restaurants. These seem to be natural settings for providing consumer nutrition information. The type of nutrition programs provided in grocery stores and restaurants may include modification of environmental cues, such as increasing the availability of health-promoting food choices (e.g. selling salads and 1% or skim milk at fast food restaurants). Such modifications may be accompanied by other point-of-purchase strategies including easily-visible labeling on products or menus, altered shelf displays in grocery stores, and nutrition information through posters and brochures. Specific examples of these types of efforts include "5 A Day for Better Health" promotions encouraging the consumption of fruits and vegetables, and the American Heart Association's program which identifies heart-smart foods.

Because changes in behavior have been shown to be transitory with point-of-purchase communications, it is recommended that these strategies be included as part of a larger campaign (IOM, 1991). An example of this is the training of chefs to employ food preparation techniques which lower the overall fat content of foods in conjunction with the preparation and identification of distinct low-fat menu selections.

Nutrition Services



Nutrition services, such as individual counseling with nutrition specialists and consultations by health care providers with such specialists, are important in the prevention and treatment of nutrition-related health problems. Universal access to nutrition services depends on physical access as well as financial access. One without the other is not adequate. If funds are not available to pay for the services needed or if there is a lack of nutrition specialists, people go without. Limited numbers of dietitians and nutritionists, especially in bush and remote areas, lack of reimbursement for services by insurance companies and high transportation costs are barriers to reasonable access to nutrition services for many Alaskans.

Training

Post-Secondary Education in Food, Nutrition, and Dietetics

Registered dietitians, dietary technicians, dietary managers, and food service personnel receive formal, specialized nutrition training to ensure that appropriate, safe and healthful foods are available for consumers. Their responsibilities often include delivering nutrition messages to consumers.

Only three institutions within Alaska offer professional training programs in the areas of food, nutrition, and dietetics. The programs include one year and two year certificates and associate's degree programs in food service or as a dietary manager; they are located in Anchorage, Fairbanks and Seward. Despite a demand for such a program, there is no bachelor degree program offered in Alaska in nutrition or dietetics, nor is there any program at the master's level. For those who want to become registered dietitians and already hold a bachelor's degree in nutrition or closely related field, an Approved Pre-Professional Practice Program (AP4) began accepting students at the University of Alaska Anchorage during August 1995. The AP4 is a 900 hour program for individuals, whose educational background meets the American Dietetic Association's Plan IV/V requirements. The AP4 program is the only means to becoming a registered dietitian in Alaska. Eighteen applications were received for the four intern slots for the 1996-1997 school year. Dietary Technicians must be trained out-of-state or by correspondence.

The demand for trained nutrition professionals within Alaska far exceeds the supply. As a result, out-of-state recruitment must be done in order to fill positions, especially for remote communities. The ensuing long-term vacancies and hiring delays ultimately result in insufficient nutrition services being provided to the citizens of Alaska.

Community Nutrition Representative Training

Community Nutrition Representative training is designed to assist para-professional workers from rural or urban Alaska in providing nutrition services to Alaska Native clients. The title Community Nutrition Representative (CNR) is given to individuals who complete four courses through the Alaska Area Native Health Service in the following areas of nutrition: Normal Nutrition Counseling, Therapeutic Nutrition Counseling, Nutrition Education and Food Preservation, and Community Resources and Problem Solving. As of December 1995, 50 individuals graduated from all four training sessions, and 160 had attended at least one session of the CNR training (*Personal Communication with B. Nobmann, AANHS, 1996*). As a result of a redirection of federal funding and the subsequent deletion of the Alaska Area Native Health Service Nutritionist position on September 30, 1996, CNR training is not being offered.

Nutrition Education and Training Program

Congress created the Nutrition Education and Training Program (NETP) to help teachers and school-food managers promote healthful eating habits among young children and school-aged children as well as to provide training to child nutrition staff. NETP is administered by the Alaska Department of Education, Food and Nutrition Services Program. Alaska is a minimum grant state, receiving \$62,500 in NETP funds annually. Although the funding is small the money provides for a variety of projects and activities. This money has been used in Alaska to:

- fund a task force to determine training needs for child care as well as school food program sponsors,
- provide training in the form of statewide conferences and on-site technical assistance to child nutrition staff in all aspects of the program,
- distribute materials to child nutrition program sponsors,
- help support the annual statewide wellness conference for school personnel,
- develop a distance education self-study kit on food sanitation and safety, and
- fund the development of a variety of nutrition education projects at the local level through a competitive grant process (*Personal Communication, K Hays, AK DOE, 1996*).

Availability

Registered dietitians are experts in the field of food and nutrition. About 110 dietitians currently work throughout Alaska, approximately one for every 5,500 people in the state.

Registered dietitians work in a variety of settings: in Alaska, most are clinical dietitians in hospitals, nursing homes or health clinics; and approximately one-quarter work in the Women, Infants and Children (WIC) nutrition program. The remainder work as consultants, in private practice or doing contract work; in public health settings for state, local, or Native health agencies; in food service or related industry (schools, hospitals, distributors); in education or child nutrition programs; or in worksites. See Appendix W for distribution of dietitians and 1995 state population by labor market region.

Nutrition Staffing for Chronic Disease Prevention (ASTPHND, 1993)

In order to implement a population-based chronic disease prevention and health promotion program, adequate staffing is required. Broad perspectives and specific skills are needed in order to address the problems and associated risk factors of chronic diseases. Nutritionists, health educators, nurses, social workers, and other health professionals should work as a team in initiating community-based chronic disease prevention and health promotion programs.

For the public health nutritionist who provides leadership in planning, consultation, technical assistance, training, and supervision in a specified jurisdictional area the suggested ratio is one full time public health nutritionist per 50,000 people in the community. This is the same ratio suggested for the local public health administrator, health educator, and social worker (Kaufman, 1990). Nationwide, it has been estimated that the number of nutritionists employed by state health agencies in their chronic disease programs is only 20% of the minimum number recommended (ASTPHND, 1993). This holds true for Alaska.

Changing dietary habits requires more than nutrition education; it also requires empowering the community to support healthful eating patterns. The trained registered dietitian or public health nutritionist has the knowledge and skills to lead decision-making, and facilitate changes among the different channels and sectors of the community to support healthful eating behaviors.

Chronic Disease Nutrition Staffing in Alaska

While clinical dietitians assist individual patients and clients with treatment and control of their chronic diseases, public health nutritionists work to prevent disease and promote healthful eating patterns among populations. In Alaska there are currently about 9 positions (7 full-time equivalents [FTEs]) with responsibilities which are exclusively focused on, or include a focus on, nutrition-related chronic disease prevention. See Table 11.

Table 11. Registered dietitian positions in Alaska which include a focus on chronic disease prevention, 1996

<u>Agency Location of Registered Dietitian</u>	<u>Number of FTEs</u>
Alaska Department of Health and Social Services	1.0 FTE
Alaska Native Medical Center Diabetes Program	1.0 FTE
Bristol Bay Area Health Corporation	1.0 FTE - vacant
Muni. of Anchorage Dept of Health and Human Services	0.5 FTE
Southeast Alaska Regional Health Consortium (SEARHC), Community Health Services, Sitka	1.0 FTE
SEARHC Health Center, Ketchikan	0.5 FTE
Southcentral Foundation	0.5 FTE
Tanana Chiefs Conf., Chief Andrew Isaac Health Center	0.5 FTE
Yukon-Kuskokwim Health Corporation	1.0 FTE
Total	7.0 FTE

There are plans to add up to two additional public health nutrition positions at the Alaska Native Medical Center in 1997 to serve the Anchorage area. On October 1, 1996, the public health nutrition position and program in the Alaska Area Native Health Service office was eliminated.

Programs

Nutrition-Related Health Promotion and Chronic Disease Prevention and Control

State of Alaska Department of Health and Social Services

The State of Alaska Department of Health and Social Services has health promotion and chronic disease prevention activities in four sections: the Section of Community Health Services and Emergency Medical Services (Health Promotion Program), the Section of Epidemiology (Cancer and Diabetes Programs), the Section of Maternal, Child and Family Health (Chronic Disease Nutrition Program), and the Section of Nursing. There are no statewide programs, however, which address heart disease or physical inactivity. Furthermore, there are no state funds appropriated for the implementation of chronic disease prevention or health promotion activities; program funding is from Federal sources. See Appendix X for State of Alaska Division of Public Health Chronic Disease Program Matrix.

A chronic disease nutrition program was established in September, 1993. The program is staffed by a master's level registered dietitian. Funding to support statewide nutrition initiatives through this program has been very limited, obtained primarily through federal grants. Grants are not a stable or sustained source of dollars, and such funding opportunities for chronic disease nutrition programs are scarce. Furthermore, these funds, when available, most often support research initiatives, not program initiatives and implementation. The availability of adequate, sustained funding for the chronic disease nutrition program is an ongoing concern.

The Department's Section of Community Health Services and Emergency Medical Services, Health Promotion Program has provided grants to support community-based health promotion programs. The grant funds have been made available from the Federal Preventive Health and Health Services Block Grant and amount to approximately \$25,000 per grant per year for a total of two years. During 1996, four programs received second year and final money, and three new Planned Approach to Community Health (PATCH) grants were awarded to communities in Alaska. The PATCH projects encourage community mobilization, assessment, identification of health needs and priorities, and development of interventions. Nutrition may be a focus of some of the programs.

Alaska Area Native Health Service

For Native entities not participating in tribal self-determination (also called compacting), Federal funding is passed through the Alaska Area Native Health Service to Alaska Native Health Corporations to support direct nutrition education, assessment

and counseling services for pregnant women, infants, children, adults and elders through programs such as preventive health care, school nutrition programs, health education programs, community health fairs, diabetes prevention and care, and elders' nutrition. These services are provided by health aides, community health representatives and community nutrition representatives. See Appendix Y for Alaska Area Native Health Service Chronic Disease and Nutrition Program Matrix Statewide Activities.

In addition to the direct services provided by the Native Health Corporations, for about 40 years, until September 30, 1996, the Alaska Area Native Health Service had a public health nutrition program staffed by master's level registered dietitians to provide services to the Native population of the state. However, as a result of recent federal downsizing and as tribal and other Native organizations have taken advantage of their recent, direct access to federal dollars, some statewide activities such as public health nutrition have been eliminated from the Indian Health Service Area offices.

The elimination of the public health nutritionist position has resulted in the loss of statewide coordination of nutrition promotion initiatives and nutritional research for the Alaska Native population living in Alaska. Examples of these functions include community nutrition representative training, applied nutrition research on traditional diets, centralized nutrition advocacy for the Alaska Native population, development and distribution of nutrition education resources, maintenance of a food composition listing for traditional Native foods, coordinated recruitment for nutrition vacancies in Native Health Corporations, establishment of nutrition programs, nutrition technical assistance to Corporations and tribal entities, and the maintenance of a repository for literature and technical materials concerning Alaska Natives and traditional diets.

Under tribal self-determination, mechanisms for providing nutrition services are now left up to the individual tribal organizations. There is a concern that the coordination, technical assistance and advocacy efforts described above will not be supported by any of the individual organizations, resulting in a marked reduction or in some cases elimination of nutrition services for a population which has been shown to have significant nutrition-related health problems such as obesity, diabetes, and heart disease, and related behaviors such as eating too few fruits and vegetables and physical inactivity.

Voluntary Non-Profit Health Organizations

Three national voluntary non-profit health organizations have Alaska affiliate offices: the American Diabetes Association, the American Cancer Society, and the American Heart Association. The main office of each affiliate is located in Anchorage; the Cancer Society and Diabetes Association have additional offices or chapters in communities throughout the state. Although the missions and programs of these agencies vary widely, all provide some type of nutrition information or education related to their particular disease state. Examples include pamphlets, cookbooks, audiovisuals, school curriculums, and programs.

Food and Nutrition Intervention Programs

Hunger causes health problems, increases education costs, and robs children of proper physical development (FRAC, 1991).

Strong evidence exists that nutrition-related disorders and health conditions related to poor nutritional status are greater among low-income households than among the rest of the population. Lack of funds to buy sufficient amounts of food is the main reason for poor nutritional status among low-income populations (Greenstein, 1992).

The majority of population-based food and nutrition programs that exist today are targeted to low-income people. The programs assist in ensuring that needy people do not go hungry, that some of their basic needs for food are being met, or that their participants learn skills and information to assist them with making wise and healthful choices about food and nutrition. The programs described in the following paragraphs are not designed for the purpose of chronic disease prevention; however, the provision of food, related services, and/or nutrition education through the programs helps ensure the health of the population. For this reason, they are reviewed in this document.

Alaska Commission on Aging: Nutrition, Transportation and Support Services



The Nutrition, Transportation, and Support Services (NTS) component of the Older Americans Act is channeled through the Alaska Commission on Aging (ACoA) to support nutritious meals for seniors. There were 103 congregate meal sites across Alaska in 1995. The ACoA is working to expand the availability of home-delivered meals to more homebound seniors; however, there are still vast areas of the state with no available NTS services. In addition to meals, NTS funds also support transportation services, providing a major portion of the operating funds for senior vans across the state. Many seniors depend almost exclusively on this transportation to get to senior meals and other essential services.

Even though Alaska has one of the fastest growing senior populations in the country, state resources for NTS services have diminished — the program's funding has remained static even though the senior population has increased. Local community contributions, including local match and client donations, accounted for 41% of the funds necessary to support local programs. All programs are targeted to low-income, minority and frail seniors who are encouraged to contribute what they can afford toward the cost of services.

NTS Statistics for FY 95

Total Seniors Served - 12,791
 313,485 congregate meals provided
 188,249 home-delivered meals provided
 Total Meals provided - 501,734
 (ACoA, 1995)

Child Nutrition Programs

With more single-parent households, more homes with both parents working, and more children in poverty, the Child Nutrition Programs are more important today than ever before. For many children, programs such as school lunch and breakfast have made the difference between going hungry and being satisfied, being under-nourished and being fed a nutritious meal.

Some of the immediate effects of poor nutrition among children include stunting of growth, anemia, fatigue, irritability, and a decrease in achievement test scores. Studies have clearly shown that well-nourished children learn better than poorly nourished children. Long-term effects of poor nutrition during childhood is probably related to the development of chronic diseases such as cancer, heart disease, and diabetes, in later life, mainly as the result of dietary excesses.

Child Nutrition Programs in Alaska are administered through the Alaska Department of Education.

Child and Adult Care Food Program (CACFP)

The CACFP is available to licensed public and private nonprofit nonresidential day care centers. Before and after school programs and programs serving only snacks are also eligible to participate, as well as adult day care centers who primarily serve impaired adults over age 60. Day care centers may be reimbursed for up to three meals per day per child or adult. The reimbursement rates are based on the percentage of low income children attending the center. All reimbursable meals must meet specific meal pattern requirements.

Child Care Food Program Statistics for FY 96

Total meals served:	2,292,021; up 7% from FY95
Free meals:	616,146; up 7%
Reduced price meals:	243,191; up 21%
Paid meals:	1,432,684; up 6%

Family Day Care Home Program (FDCHP)

Licensed day care homes, including group homes, up to a licensed capacity of 13 children may participate in the Family Day Care Home Program. Providers are reimbursed for up to three meals per day per child, and reimbursable meals must meet specific meal pattern requirements. Day care providers can participate in the program through a nonprofit sponsor who is responsible for all aspects of program administration. The sponsor must provide training, technical assistance, and perform at least three on-site visits in each home each year. The sponsor receives funding to administer the program.

Currently, the same meal reimbursement rates are given to all participating homes; however, as of July 1, 1997, the program will change to a two-tiered system of reimbursement. This system will reimburse day care providers at the prevailing rate of

reimbursement if the provider lives in an attendance area where the elementary school has 50% or more children receiving free or reduced price meals. Outside of these areas, the agency sponsoring the family day care home program will collect and classify income applications from children in the day care homes. The provider will receive the prevailing reimbursement rate for children who qualify for free or reduced price meals and will receive a lower rate of reimbursement for children who do not qualify for free or reduced price meals. The impact of this change on the program is unknown. There is the potential, however, for a decrease in the number of providers participating in the program as a result of reduced reimbursement rates with no reduction in paperwork. During FY96 the program served 1,956,866 meals, down 6% from FY95.

School Breakfast and the National School Lunch Program

Both the School Breakfast Program (SBP) and the National School Lunch Program (NSLP) are administered by the US Department of Agriculture's Food and Nutrition Services in conjunction with state education agencies and local schools. The NSLP and SBP are entitlement programs with no limit on the number of children served. All public or private non-profit schools and residential child care institutions that meet eligibility requirements may participate. Household income is used to determine whether a child who attends a participating school will pay a substantial part of the cost for their meal or will receive a reduced-price or free meal. Meals must meet specific nutritional requirements in order to qualify for federal funds. When a school chooses not to participate or drops out of these programs, all students in the school, including low-income youths, are denied access to the programs.

According to Kathleen Hays of the Alaska Department of Education, Food and Nutrition Services (*Personal Communication, 2/96*) there are 346 public schools and 30 Residential Child Care Institutions in Alaska that participate daily in the National School Lunch Program. This equates to about 75% of Alaska's public schools or 82% of the school districts participating in the NSLP. Forty-two percent of the schools participating in the NSLP also participate in the breakfast program. The 30 Residential Child Care Institutions of Alaska participate in both programs daily, seven days a week.



Table 12. School Lunch Programs Statistics for FY 95 and FY 96

	<u>FY 95</u>	<u>FY 96</u>
Lunch		
Average Daily Participation	41,122	42,461
Free/Reduced	56%	58%
Paid	44%	42%
Total lunches served:		7,643,065; up 6% from 1995
Free lunches:		3,613,433; up 9%
Reduced price lunches:		787,642; up 8%
Paid lunches:		3,241,990; up 2%
Breakfast		
Average Daily Participation	7480	7458
Free/Reduced	80%	82%
Total breakfasts served:		1,342,437; up 10% from 1995
Free breakfasts:		994,152; up 12%
Reduced price breakfasts:		107,035; up 23%
Paid breakfasts:		241,250; down 1%

The NSLP and SBP have been found to positively impact school attendance. The Food Research and Action Center's (FRAC) Community Childhood Hunger Identification Project (CCHIP) survey (FRAC, 1991) reported that low-income children were less likely to have school absences if they received breakfast at school compared with those children who did not get breakfast at school. In addition, children who were at risk of hunger were absent less often when they got breakfast at school versus not getting it there.

During fall 1995, the Alaska Department of Education, Food and Nutrition Services, launched a "Start Your Head, Eat Breakfast" campaign. The campaign is targeted at raising the awareness of adolescents in the importance of eating breakfast in order to perform better at school. A set of 30-second public service announcements (PSAs) were written by and for teenagers and are accompanied by a set of posters that can be displayed at school. The PSAs have been shown in the larger cities as well as on the rural Alaska television network (RATNET). A breakfast poster with classroom activities printed on the reverse side has also been distributed to all elementary schools to promote the importance of breakfast.

Special Milk Program

The Special Milk Program is available to public and private nonprofit schools, child care centers, residential child care institutions, and other nonprofit institutions devoted to the training and care of children, including shelters, which do not participate in a USDA meal program. The program reimburses a set rate for all milk served to children while in the care of the institution. The institution may be reimbursed the full cost of the milk served to low-income children.

Summer Food Service Program

The Summer Food Service Program provides meals to low-income children during the summer months and school vacations. Public or private nonprofit organizations such as schools, summer camps, tribal councils and municipal governments are potential sponsoring sites, and a small amount of money is available to the sponsor

for program administration. Sponsors must be located in areas where the majority of children are low income. As in other Child Nutrition Programs, meals must meet specific nutritional requirements. In geographic areas where 50% or more of the children are needy, all meals are served free to children regardless of household income.

In Alaska, the Summer Food Service Program is the most underutilized of the Child Nutrition Programs. Three sponsors participated in the program during 1995 in Alaska, which provided only 1% of participants from the National School Lunch Program access to the Summer Food Service Program (*Personal Communication, K. Hays, AK DOE, 1996*). Alaska has one of the lowest Summer Food Service Program participation rates in the country (FRAC, 1994).

Cooperative Extension Service, University of Alaska



The Cooperative Extension Service provides practical information and education to adults and youth in order to assist them in solving farm, home and community problems. Nutrition education in the community is a major emphasis. Attention is also focused on food preservation and on utilization of wild products, such as game, fish and wild plants.

Expanded Food and Nutrition Education Program (EFNEP)

EFNEP is a free nutrition education program offered to low-income individuals through the Cooperative Extension Service. Paraprofessionals from the program provide nutrition education classes in a client's home or in small group settings. Topics include shopping for food, managing time and money, the Food Guide Pyramid, cooking, resource management, food safety, and feeding infants and children. The target audience is families with young children. EFNEP programs are located in Anchorage, Fairbanks, and Juneau.

Food Bank of Alaska and Other Private Philanthropic Food Assistance Agencies

The Food Bank of Alaska, based in Anchorage, provides food to needy Alaskans through four redistribution points located in Juneau, Nome, Kenai and Fairbanks. The Food Bank does not directly provide food to individuals or families. Approximately 125 small community service organizations (such as churches and shelters) throughout the state operate local food pantries. Many private non-profit philanthropic agencies such as the Salvation Army, "soup kitchens" and religious organizations provide direct temporary assistance in communities throughout the state, utilizing Food Bank and other donated foods.

In 1995, the Food Bank of Alaska and other members of the private philanthropic food assistance community joined with government food assistance programs to form the Alaska Food Coalition. This group, with 45 members representing ten communities from around the state, was organized to strengthen and coordinate public and private food and nutrition assistance programs, and to educate policy makers about

Alaskan food needs. The mission of the coalition is to maximize low-income Alaskans' access to nutritious foods.

Food Stamp Program

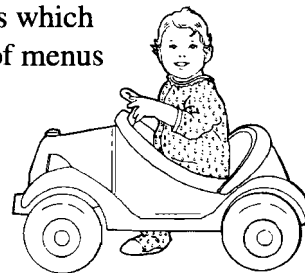
The Food Stamp Program helps alleviate hunger in the United States. The mission of the program is to help low-income people purchase food to improve their diets. Nationally, half of all food stamp participants are children; 87% are children, the elderly, or women (Tufts University, 1994). Any household which meets program eligibility requirements is entitled to receive food stamps. The federal government pays the full cost of food stamps and at least half of the program's administrative costs, with state and local governments paying the remainder (Tufts University, 1994).

Food stamps can be used to purchase most edible food and food products from authorized retail grocers. Those wanting to grow their own food can use food stamps to purchase vegetable plants and seeds. Food stamps cannot be used to buy prepared hot foods for immediate consumption, nor can they be used to buy alcohol, tobacco, medicines, vitamins, or paper products. Special rules for Alaska permit households in rural areas to buy subsistence hunting and fishing gear with food stamps. Purchases made with food stamps are not subject to sales tax.

Food Stamp Program participation in Alaska varies seasonally; participation is lower during summer and fall, and increases throughout the winter months. During FY95, participation in Alaska ranged from a low of 15,500 households (about 46,650 people) during October to a high of 17,900 households (about 53,900 people) during April (*Personal Communication, Randy Moore, AK DHSS, 1/96*). Average participation is about 8% of the total population of the state.

Head Start

The Head Start program provides low-income children, birth to five years of age, and their families with comprehensive developmentally and culturally appropriate services which emphasize cognitive, language, and sociomotor development, physical and mental health, and parent involvement. The program's intent is to enable each child to develop and function at his or her highest potential. Nutrition education is an integral component of the Head Start program with emphasis on the importance of culturally relevant food. It includes home visits which involve food preparation and cooking activities, and posting of menus in centers as well as menu distribution to parents. All meals are served according to Federal and State guidelines. During 1995, the Alaska Head Start programs served 3,259 children statewide through 13 grant agencies in 88 communities (*Personal Communication with Marilyn Webb, Head Start, 2/96*).



Maternal and Child Health (MCH) Nutrition Services

Using Title V Block Grant money, the Department of Health and Social Services, Section of Maternal, Child and Family Health, Nutrition Unit contracts with registered dietitians (RDs) in the major cities throughout the state to provide specialty nutrition services to high risk children and pregnant women who have no third party payment for services. The dietitians provide individualized counseling, consultation to Infant Learning Programs, and inservices for health care professionals. Currently services are available in Anchorage, Fairbanks, Homer, MAT-SU Borough, and Aleutian-Pribilof Islands. More RD providers are expected to be available in additional communities in early 1997.

Medicaid Nutrition Services

Medicaid pays for nutrition services to high risk pregnant women and children under age 21. Services are rendered by registered dietitians who are Medicaid providers. Approximately 15 RDs in Alaska are authorized to provide services.

Special Supplemental Nutrition Program for Women, Infants and Children (WIC)

WIC is a federally funded nutrition program designed to influence lifetime nutrition and health behaviors in a targeted, high-risk population through short-term intervention. Participants, which include infants and children up to age 5, pregnant, postpartum, and breast-feeding women, are provided with nutrition education and counseling, breast-feeding promotion and education, a monthly food prescription, and referrals to medical and social services. Participants must have a documented health or nutritional risk, and be at or below 185% of the federal poverty level. Nationally, the average income of a participant is \$9,684. Participants are certified for six month periods, then reassessed. The average time of participation in the program is 16 months (NAWD, 1996).



Nutrition education is provided through individual counseling, group classes, printed materials, and interactive displays in WIC clinics. Topics include diet during pregnancy, good nutrition for infants and toddlers, breast-feeding, diet and dental health, anemia and iron-rich foods, and similar topics.

WIC provides a monthly prescription of nutritious foods tailored to supplement the dietary needs of participants. The foods are specifically chosen to provide high levels of protein, iron, calcium Vitamins A and C, nutrients that have been shown to be lacking or needed in extra amounts in the diets of the WIC population (NAWD, 1996). The prescription includes infant formula (for infants who are not breast-fed), infant cereal and juice for infants; and milk, eggs, juice, dried beans and peanut butter for pregnant and postpartum women, and children. For breast-feeding mothers, an expanded prescription also includes tuna and carrots. Recently the USDA approved a proposal allowing canned pink salmon to be substituted for tuna in Alaska. The

prescribed foods are listed on checks which participants receive at a WIC clinic and cash for the foods at a grocery. The average monthly cost of the food prescription in FY96 was approximately \$47.00 per participant.

As of 1996, there are 15 agencies operating 25 permanent WIC clinic sites and serving 276 villages throughout Alaska, through grants from the DHSS using USDA funds. During FY95-96, WIC participation increased nearly 40%, reaching an all-time high of 23,315 participants in the month of September, 1996. In the Anchorage Metropolitan area, the region with the highest projected underserved WIC-eligible population, participation has increased by 44%, currently totaling over 8,500 per month.

In 1995-96, new WIC clinics opened in Homer, Valdez, Fairbanks, and at the Anchorage Neighborhood Health Center and Providence Hospital in Anchorage. New clinic vehicles now serve the Kenai peninsula, and drive the Yukon and Kuskokwim Rivers in winter. A new full-service mobile WIC clinic began operation in the Anchorage area in November, 1996.

About 70% of Alaska's WIC participants are in the top three of the seven priority groups served by WIC, indicating that the program is reaching those with the highest medical and nutritional risks. Alaska's WIC Program has been particularly successful in promoting breast-feeding. The Women in WIC in Alaska have achieved the second highest breast-feeding incidence and duration rates of all US WIC Programs in 1995.

Federal funding for WIC food and nutrition services increased 44% in FY95-96, from approximately \$11 million to nearly \$16 million. Program income in the form of infant formula rebates have increased by 78%, from approximately \$1.3 million to \$2.4 million. It is estimated that approximately \$500,000 in unspent WIC food funds will be returned to the USDA in FY96, as federal nutrition service funding for administration of local WIC agencies is insufficient to provide enough client services to fully expend these federal food dollars. According to USDA projections, Alaska is currently serving about 64% of those potentially eligible for WIC (*Personal Communication with Nancy Rody, AK DHSS WIC Program, 11/96*).

WIC immunization projects have begun in the Yukon-Kuskokwim Delta and in Anchorage, in cooperation with the Section of Epidemiology. Special federal grants were received for a baby bottle tooth decay prevention project in the Yukon-Kuskokwim Delta in 1994, and for a rural television nutrition education series in the Aleutian and Pribilof Islands in 1995.

The Emergency Food Assistance Program (TEFAP)

TEFAP is a commodity distribution program administered through the Alaska Department of Education (DOE). The DOE sub-contracts with the Food Bank of Alaska (FBA) to provide USDA food products to Alaska's needy households. The Food Bank does so by sending USDA food packages to eligible distribution sites statewide.

Participants must meet income guidelines, and the amount of food they receive is dependent upon household size. There is a maximum distribution allowance of one food package per month. During FY 95, 16,716 individuals were provided with food through TEFAP. The value of food distributed was \$54,585. As a comparison, \$186,422 was distributed during FY 94. The value of food distributed to the FBA during FY 96 was \$68,861. The total number of individuals served was 15,239 with an estimated number of households of 5,070. It is anticipated that the value of food to be made available to the FBA during FY 97 will be similar to FY 96 (*Personal Communication with M. Wheeler, AK DOE, 8/96*).

Cost Effectiveness

Medical Nutrition Therapy

Medical nutrition therapy is the treatment of illness and injury involving assessment of a patient's nutritional status and appropriate treatment, ranging from diet modification to the use of specialized nutrition therapies such as intravenous or tube feedings. Attention to such services, that reduce long-term medical costs, is essential to providing good health care during a time when programs, administrators, and the federal government are attempting to cut health care costs.

Medical nutrition therapy has been shown to save an average of more than \$8,000 per case according to an internal analysis of case studies by the American Dietetic Association (ADA, 1995). Medical nutrition therapy saves money by reducing the length of hospital stays, decreasing complications, decreasing the need for medications, and lessening the need for high-technology treatment (ADA, 1995). For example, in the treatment of heart disease, \$9,134 per case is saved because there is a reduced need for drug therapy and other artery-clearing procedures and/or surgery (ADA, 1995).

Despite the dramatic savings of medical nutrition therapy and the acceptance of its necessity in treating many diseases and conditions, medical nutrition therapy is seldom covered by health insurance. Reimbursement for nutritional services is fragmented and inconsistent across the state and across payers (both private and government), and health care settings. As health reform continues at the state and federal levels it is essential that medical nutrition therapy be identified in the basic benefit package and be covered whenever it is deemed medically necessary by a patient's physician and treatment team.

WIC

There is a stronger body of research indicating the general cost effectiveness of WIC than there is for virtually any other federal assistance program. Prenatal WIC participation increases average birthweight and reduces the risk of low birthweight (LBW) (Ku, 1994). A number of statistically controlled evaluations that compared prenatal women who received WIC benefits with demographically similar women who did not receive WIC services have found WIC enrollment associated with decreased levels of LBW among WIC infants. Several also found lower overall maternal and infant

hospital costs among women who had received prenatal WIC services. A meta-analysis of the studies shows that WIC reduces LBW by 25% and very LBW by 44%. Using these data to estimate costs, prenatal WIC enrollment was estimated to have reduced first year medical costs for US infants by \$1.19 billion in 1992 (Avrunch, 1995).

Prenatal WIC participation reduces Medicaid costs for the care of mothers and babies. Studies of WIC in five states indicated that every dollar spent on WIC prenatal care may save from \$1.77 to \$3.90 in Medicaid costs for mothers and children in the first 60 days of life (Devaney, 1992). Prenatal WIC participation is associated with reductions in infant mortality. Research shows reductions in infant deaths, particularly in the first 28 days of life, and with reductions in late fetal deaths and miscarriages (Ku, 1994). Prenatal WIC participation may improve children's mental development. Some small studies found that children born of women who participated in WIC during pregnancy have higher IQs than siblings born when their mothers were not on WIC, and young children who have been on WIC during pregnancy score better on vocabulary tests than non-WIC children (Rush, 1988). Children who participated in WIC after their first birthday had better digit memory test scores than children who did not participate in WIC (NAWD, 1996).

WIC improves children's diets. Children ages one to four on WIC have higher consumption of iron and vitamin C than similar children not on WIC (Ku, 1994). There is evidence that WIC participation is associated with decreased iron-deficiency anemia. According to CDC data from 1980 to 1992, the anemia rate among children at the six-month re-certification is 16% lower than the rate at the WIC initial screening (NAWD, 1996).

Section IV: Needs

Summary of Needs

This needs assessment shows that four of the top ten leading causes of death in Alaska — cancer, heart disease, stroke and diabetes — are related to diet. When we look at the root causes of death, we find that 50% of all deaths are related to lifestyle choices and of that, nearly 30% are related to poor diet and inactivity. While a number of nutrition education and food assistance programs operate in Alaska, none have comprehensively addressed the prevention of chronic disease with sufficient resources to have a significant impact on the health of Alaskans.

To effectively reduce the burden of chronic disease in Alaska and throughout the US, a multi-faceted, comprehensive plan that focuses on increased physical activity and enhanced eating patterns is needed. This report calls attention to the need for initiatives to improve food access and availability; environmental conditions and support; education; and data collection and research.

Food Access and Availability

- increased access to and availability of affordable, good-quality fresh fruits and vegetables and low fat food choices in rural and village communities
- increased access to and availability of a food supply that is desirable to consumers, especially in remote areas
- access to subsistence foods consumed as part of a traditional diet
- increased availability of food assistance programs such as Food Stamps, Special Supplemental Nutrition Program for Women, Infants and Children (WIC), Head Start, Senior Meals, and food banks to low-income families in under-served areas
- increased availability of high fiber, low fat foods in vending machines, snack bars, cafeterias, fast-food and sit-down restaurants, and village stores
- increased efforts to improve participation rates in the Summer Food Service Program

Environmental Conditions and Support

- quality school-based nutrition programs in conjunction with physical education from preschool through secondary school, as part of comprehensive school health programs and sequential comprehensive school health education
- increased availability of and access to community-based wellness and health promotion programs to educate segments of the population at highest risk for nutrition problems, low income groups, and the general public about low-fat, high-fiber diets, physical activity, and weight control as part of making lifestyle changes
- increased availability of nutrition education programs in worksites, preferably as part of comprehensive worksite wellness programs
- development of community coalitions and public-private partnerships to work toward addressing locally identified needs
- increased availability of high fiber, low fat menu choices, low fat dairy products, whole grain products, and fruits and vegetables in vending machines, snack bars, cafeterias, restaurants, and village stores
- availability of post-secondary education opportunities in the field of food and nutrition, including a 4-year degree program
- increased number of Pre-Professional Practice Program training slots for dietitians
- increased emphasis by health care practitioners on lifestyle change as a way to help prevent and control diet-related chronic diseases
- focus by programs and services on the root causes of death rather than resulting disease conditions
- financial coverage of nutrition services in public and private agencies at the state and local levels
- identification of and advocating for long-term sources of funding to support nutrition services

Education

- public information and nutrition education materials that are culturally sensitive and at an appropriate reading for the target audience
- provision of nutrition and skill building information for private and public food assistance program recipients
- specific nutrition education messages targeted to particular segments of the population such as those at highest risk for chronic diseases, children and low income groups
- consumer education on the economic benefits of healthful eating
- more emphasis on the relationship between healthful eating and enhanced quality of life
- increased availability of point-of-purchase nutrition information at grocery stores, worksite cafeterias, restaurants, and vending machines
- increased, improved, and consistent media coverage of nutrition information and messages for the public
- increased marketing by industry of healthful foods such as whole grains and whole grain products, fruits, vegetables, low fat dairy products, and protein foods
- increased educational efforts targeted toward current and prospective providers and payers of nutrition services about the value and benefits of these services
- increased efforts to inform elected officials and policy makers concerning the relationship between nutrition and chronic disease
- increased efforts to promote the identification, gathering, and preparation of traditional and subsistence foods.

Data Collection and Research

- collection and analysis of heights and weights of school-aged children
- expansion of Pregnancy Nutrition Surveillance System (PNSS) and Pediatric Nutrition Surveillance System (PedNSS) to non-WIC populations
- collection and analysis of food consumption patterns among adults (average adult daily intake of fat and total calories)
- information on school-based nutrition education including course content, instructors, and how many Alaska schools offer these programs as part of a planned and sequential quality school health education program
- information on nutrition knowledge and behaviors
- information on the number of hungry people in Alaska
- collection of data using methods that allow results to be compared to nutrition-related objectives of *Healthy Alaskans 2000*
- repetition of surveys such as the Behavioral Risk Factor Surveillance System and Youth Risk Behavior Survey or nutrition-related survey questions to allow for trend analysis
- widespread dissemination of data to health care, social service, education providers, and policy makers
- continuing analyses of and access to nutritional values of traditional/subsistence foods

The Eat Smart Alaska coalition will use this report to develop a plan to mobilize Alaskans to improve their eating patterns. Communities are also encouraged to use the report to initiate and evaluate action plans specific to their population.

Endnotes

¹ Information in this section was obtained from the Alaska Department of Health and Social Services 1994 publication *Healthy Alaskans 2000: Charting the Course of Public Health for the Decade*.

² Information in this paragraph was obtained from the Alaska Department of Health and Social Services 1994 publication *Healthy Alaskans 2000: Charting the Course of Public Health for the Decade*.

³ Information in this section was obtained from the Alaska Department of Labor's (AK DOL) 1996 publication, *Alaska Population Overview 1995 Estimates*.

⁴ Information in this section is from the Bureau of Census, *Census of Population and Housing, 1990*.

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APPENDIX A

Selected Healthy People 2000 National Health Promotion and Disease Prevention Objectives Related to Nutrition and Chronic Disease Prevention

Health Status Objectives:

- 2.1 Reduce coronary heart disease deaths to no more than 100 per 100,000.
- 2.2 Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000
- 2.3 Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19.

Risk Reduction Objectives

- 2.5 Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older.
- 2.6 Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products.
- 2.7 Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight.
- 2.8 Increase calcium intake so at least 50 percent of youth aged 12 through 24 and 50 percent of pregnant and lactating women consume 3 or more servings daily of foods rich in calcium, and at least 50 percent of people aged 25 and older consume 2 or more servings daily.
- 2.9 Decrease salt and sodium intake so at least 65% of home meal preparers prepare foods without adding salt, at least 80 percent of people avoid using salt at the table and at least 40 percent of adults regularly purchase foods modified or lower in sodium.
- 2.13 Increase to at least 85 percent the proportion of people aged 18 and older who use food labels to make nutritious food selections.

Services and Protection Objectives:

- 2.14 Achieve useful and informative nutrition labeling for virtually all processed foods and at least 40 percent of fresh meats, poultry, fish, fruits, vegetables, baked goods, and ready to eat carry away foods.
- 2.15 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer identifiable low-fat, low-calorie food choices, consistent with the Dietary Guidelines for Americans.
- 2.18 Increase to at least 80 percent the receipt of home food services by people aged 65 and older who have difficulty in preparing their own meals or are otherwise in need of home delivered meals.
- 2.19 Increase to at least 75% the proportion of the Nations schools that provide nutrition education from preschool through 12th grade, preferably as part of quality school health education.
- 2.20 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer nutrition education and/or weight management programs for employees.
- 2.21 Increase to at least 75 percent the proportion of primary care providers who provide nutrition assessment and counseling and/or referral to qualified nutritionists or dietitians.

APPENDIX B

Census areas which make up the six labor market regions

Anchorage/Mat-Su Region

Anchorage Borough
Matanuska-Susitna Borough

Gulf Coast Region

Kenai Peninsula Borough
Kodiak Island Borough
Valdez-Cordova Census Area

Interior Region

Denali Borough
Fairbanks North Star Borough
Southeast Fairbanks C.A.
Yukon-Koyukuk Census Area

Northern Region

Nome Census Area
North Slope Borough
Northwest Arctic Borough

Southeast Region

Haines Borough
Juneau Borough
Ketchikan Gateway Borough
Prince of Wales-Outer Ketchikan C.A.
Sitka Borough
Skagway Yakutat Angoon C.A.
Wrangell Petersburg C.A.

Southwest Region

Aleutians East Borough
Aleutians West Borough
Bethel Census Area
Bristol Bay Borough
Dillingham Census Area
Lake and Peninsula Borough
Wade Hampton Census Area

Source: AK DOL, 1993

APPENDIX C

Alaska population density by labor market region, 1990

Labor Market Region	Persons per Square Mile
Anchorage/Matanuska-Susitna	10.1
Gulf Coast	1.1
Interior	0.5
Northern	0.14
Southeast	1.2
Southwest	0.34
Statewide	0.96

Source: Bureau of Census, 1991

APPENDIX D

Alaska population over age 65 by labor market region, 1991

Labor Market Region	% Population 65+ Years
Anchorage/Matanuska-Susitna	3.9
Interior	3.4
Gulf Coast	4.7
Northern	4.5
Southeast	5.9
Southwest	3.8
Statewide	4.2
<i>Source: AK DOL, 1993</i>	

APPENDIX E

Race distribution in Alaska by labor market region, 1991

Labor Market Region	White	Alaska Native	Black	Asian/PI
Anchorage/Matanuska-Susitna	83%	6.5%	6%	4.5%
Gulf Coast	85%	10%	1%	4%
Interior	80%	12%	6%	2%
Northern	20%	77%	<1%	3%
Southeast	77%	19%	1%	3%
Southwest	31%	62%	2%	5%
Statewide Total	76%	16%	4%	4%
<i>Source: AK DOL, 1993</i>				

APPENDIX F

Family households in Alaska by labor market region, 1990

Labor Market Region	Family HH as % of All Households	Married Couple	Female Head, No Husband	Other Family Households
Anchorage/Mat-Su	35%	80%	14%	6%
Gulf Coast	8%	83%	12%	5%
Interior	12%	82%	12%	6%
Northern	2%	63%	21%	16%
Southeast	9%	80%	13%	7%
Southwest	4%	75%	16%	9%
Statewide	70%	80%	14%	6%

Source: Bureau of Census, 1991

Non-family households in Alaska by labor market region, 1990

Labor Market Region	Non-Family Households as % of all Households	Living Alone as % of all Non-Family Households	Living Alone Aged 65+ as % of all Non- Family HH	Other Non-Family Households
Anchorage/Mat-Su	16%	73%	9%	18%
Gulf Coast	3%	75%	13%	12%
Interior	5%	79%	10%	11%
Northern	1%	78%	8%	14%
Southeast	4%	74%	14%	12%
Southwest	1%	77%	10%	13%
Statewide	30%	75%	10%	15%

Source: Bureau of Census, 1991

APPENDIX G

Percent housing units lacking complete plumbing and kitchen facilities in Alaska by labor market region, 1990

Labor Market Region	% Lacking Plumbing	% Lacking Kitchen
Anchorage/Matanuska-Susitna	4.3	3.9
Gulf Coast	17.01	15.3
Interior	19.5	18.0
Northern	57.3	46.1
Southeast	8.0	7.3
Southwest	43.8	40.4
Statewide	12.5	11.2

Source: Bureau of Census

APPENDIX H

Percentage of people unemployed (16 years or older), per capita income (1989 dollars) and percent of people living in poverty in Alaska by labor market region, 1990

Labor Market Region	% Unemployed	% People in Poverty	Per Capita Income
Anchorage/ Matanuska-Susitna	8	7	\$19,065
Gulf Coast	9	7	\$19,263
Interior	11	10	\$15,294
Northern	17	17	\$12,718
Southeast	7	9	\$18,434
Southwest	10	23	\$11,458
Statewide	9	9	\$17,610
<i>Source: Bureau of Census, 1991</i>			

APPENDIX I

High school and college graduates aged 25+ years in Alaska by labor market region, 1990

Labor Market Region	% HS Grads	% College Grads
Anchorage/Matanuska-Susitna	90	26
Gulf Coast	86	19
Interior	88	24
Northern	66	13
Southeast	86	24
Southwest	66	13
Statewide	87	23

Source: Bureau of Census, 1991

APPENDIX J

1959 METROPOLITAN HEIGHT-WEIGHT TABLES DESIRABLE WEIGHTS FOR MEN OF AGES 25 AND OVER* +

Height	LBS		
	Small Frame	Medium Frame	Large Frame
5'2"	112-120	118-129	126-141
5'3"	115-123	121-133	129-144
5'4"	118-126	124-136	132-148
5'5"	121-129	127-139	135-152
5'6"	124-133	130-143	138-156
5'7"	128-137	134-147	142-161
5'8"	132-141	138-152	147-166
5'9"	136-145	142-156	151-170
5'10"	140-150	146-160	155-174
5'11"	144-154	150-165	159-179
6'0"	148-158	154-170	164-184
6'1"	152-162	158-175	168-189
6'2"	156-167	162-180	173-194
6'3"	160-171	167-185	178-199
6'4"	164-175	172-190	182-204

+Weight in pounds according to frame (in indoor clothing shoes with 1" heels).

1959 METROPOLITAN HEIGHT-WEIGHT TABLES DESIRABLE WEIGHTS FOR WOMEN OF AGES 25 AND OVER* +

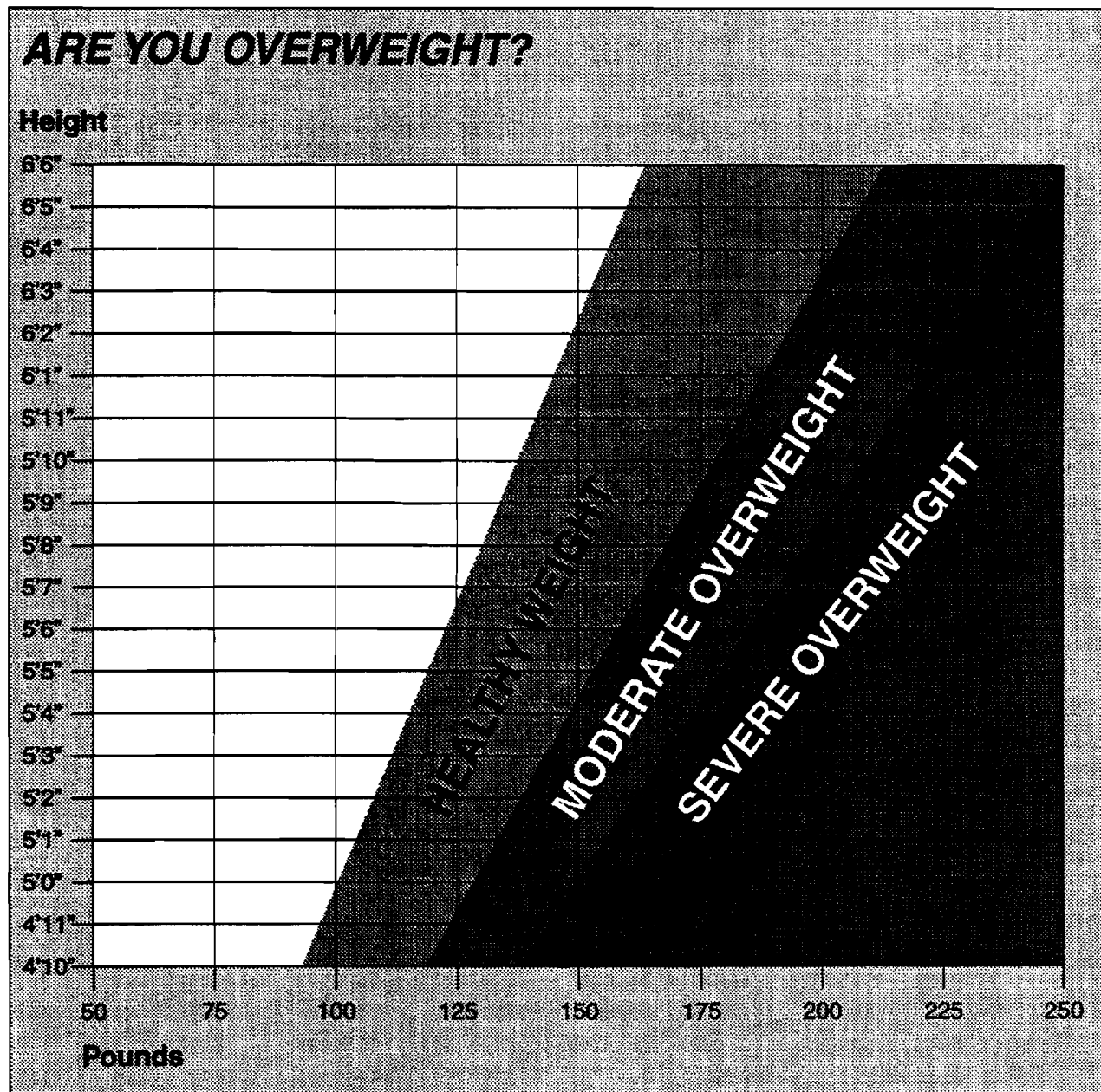
Height	LBS		
	Small Frame	Medium Frame	Large Frame
4'10"	92-98	96-107	104-119
4'11"	94-101	98-110	106-122
5'0"	96-104	101-113	109-125
5'1"	99-107	104-116	112-128
5'2"	102-110	107-119	115-131
5'3"	105-113	110-122	118-134
5'4"	108-116	113-126	121-138
5'5"	111-119	116-130	125-142
5'6"	114-123	120-135	129-146
5'7"	118-127	124-139	133-150
5'8"	122-131	128-143	137-154
5'9"	126-135	132-147	141-158
5'10"	130-140	136-151	145-163
5'11"	134-144	140-155	149-168
6'0"	138-148	144-159	153-173

+For girls between 18 and 25, subtract 1 pound for each year under 25. Weight in pounds according to frame (in indoor clothing, shoes with 2" heels).

Source: American Dietetic Association. 1988. *Manual of Clinical Dietetics*. Chicago IL

APPENDIX K

Weight for Height Classification by Body mass Index (BMI)



Provided by:

USDA Center for Nutrition Policy and Promotion
 1120 20th Street, N.W.
 Suite 200, North Lobby
 Washington, DC 20036-3475

APPENDIX L

*Prevalence of overweight, based on BMI, among adults in Alaska
by BRFSS region and gender, Alaska BRFSS, 1994*

BRFSS REGION	%*	95% confidence interval
Region1/Urban	27	22.1 - 31.9
Male	30	22.9 - 37.6
Female	24	17.2 - 29.9
Region 2/Gulf Coast	27	22.0 - 32.0
Male	28	20.3 - 35.1
Female	26	19.5 - 32.7
Region 3/Southeast	35	30.1 - 40.6
Male	37	29.6 - 44.9
Female	33	26.3 - 40.3
Region 4/Bush	28	22.6 - 33.0
Male	22	15.1 - 28.4
Female	36	28.6 - 44.0
ALL REGIONS	29	24.8 - 31.5
Male	29	24.9 - 34.6
Female	26	22.0 - 30.8

Source: AK DHSS, 1994 BRFSS

- * weighted percent of Alaskan adults aged 18 and older that are overweight based on Body Mass Index

APPENDIX M

Prevalence of overweight among adults in Alaska based on BMI, by selected demographics, Alaska BRFSS, 1994

	%*
Gender	
Male	30
Female	26
Age	
18 - 24	20
25 - 34	21
35 - 44	29
45 - 54	38
55 - 64	37
65+	45
Education	
Elementary School	30
Some High School	28
High School Grad or GED	31
Some College or Tech School	31
College Graduate	22
Marital Status	
Married	30
Divorced	25
Widowed	35
Separated	**
Never Married	23
Unmarried Couple	22
TOTAL 95% Confidence Interval (24.8% - 31.5%)	28

* weighted percentage of the adult population that are overweight in this demographic subgroup, based on survey data.

** not reported

APPENDIX N

Summary of fruit and vegetable consumption among Alaskan adults by gender group and by age group, Alaska BRFSS 1994

	<once per day or never %	1 or 2 times per day %	3 or 4 times per day %	5 or more per day %
Gender				
Male	4	41	39	17
Female	2	29	47	21
Age Group				
18-24	5	33	42	20
24-34	5	39	42	14
35-44	1	36	42	21
45-54	3	34	41	23
55-64	2	39	42	17
65+	3	18	55	24
TOTAL	3	35	43	19

Summary of fruit and vegetable consumption among Alaskan adults by gender and age, Alaska BRFSS 1994

	<once per day or never %	1 or 2 times per day %	3 or 4 times per day %	5 or more per day %
Male				
18 - 24	7	31	43	20
25-34	5	46	34	14
35-44	2	42	39	17
45-54	2	34	41	23
55-64	4	53	33	9
65+	6	28	51	15
Female				
18-24	4	35	42	20
25-34	4	32	50	14
35-44	0	28	46	26
45-54	3	34	40	23
55-64	-	22	52	26
65+	1	10	57	32
TOTAL	3	35	43	19

* a weighted percentage of the adult population in this demographic subgroup that consumes fruits and vegetables in this category.

APPENDIX O

Population consuming five or more daily servings of fruits and vegetables by BRFSS Region, Alaska BRFSS 1994

BRFSS Region	% eating 5 or more daily servings*	95% Confidence Interval
Region 1/Urban	17	13.0 - 21.4
Male	17	10.7 - 23.0
Female	18	11.8 - 23.2
Region 2/Gulf Coast	23	17.8 - 27.1
Male	18	11.6 - 24.5
Female	28	21.3 - 34.5
Region 3/Southeast	24	19.5 - 28.9
Male	19	12.6 - 24.8
Female	30	23.3 - 37.4
Region 4/Bush	18	13.5 - 22.6
Male	12	6.0 - 17.1
Female	27	19.8 - 34.4
TOTAL	19	15.9 - 21.6
Male	17	12.5 - 20.6
Female	21	17.3 - 25.3

* *weighted percentage of the adult population in each region that consumes five or more servings of fruits and vegetables daily.*

APPENDIX P

Summary index of dietary fat consumption among Alaskan adults by age and sex, Alaska BRFSS 1992

	≤25th Percentile %*	25th - 75th Percentile %	>75th Percentile %
MALE AGE GROUP			
18 - 24	1	46	42
25 - 34	12	32	49
35 - 44	18	48	27
45 - 54	32	42	24
55 - 64	21	47	21
65+	**	**	**
MALE TOTAL***	16	42	34
FEMALE AGE GROUP			
18 - 24	11	51	33
25 - 34	21	63	14
35 - 44	37	49	12
45 - 54	34	45	10
55 - 64	30	41	14
65+	45	31	7
FEMALE TOTAL***	28	51	15

Source: AK DHSS, 1994

* Weighted percentage of the adult population in this demographic subgroup within this percentile.
 ≤25th Percentile = Lowest fat consumers
 ≥75th Percentile = Highest fat consumers

** Not reported

***Totals do not add up to 100% because the percentage of Unknown/Refused category of responses is not shown.

APPENDIX Q

Adult dietary fat eating patterns, Alaska BRFSS 1992

How often eaten	Daily or more % *	1-2 times per week %	3-6 times per week %	1-3 times per month %	<1 time per month or never %
Hot dogs/lunch meats					
Ham	3	28	12	33	22
Bacon/Sausage	1	24	4	39	31
Hamburger/Cheeseburgers					
Meatloaf	1	47	13	27	11
Other beef	2	44	18	21	13
Other Pork	1	17	2	45	33
Fried Chicken	0	18	2	39	38
French Fries/Fried Potatoes	1	33	10	36	18
Cheese/Cheese Spread	11	34	34	12	7
Doughnuts/Cookies/Cakes					
Pies/Pastry	9	32	18	24	14
Snacks/Chips/Popcorn	10	34	23	20	11
Butter/Margarine	41	17	22	5	12
Eggs (# servings)	8	34	25	17	15
Whole Milk (# servings)	15	8	6	5	64

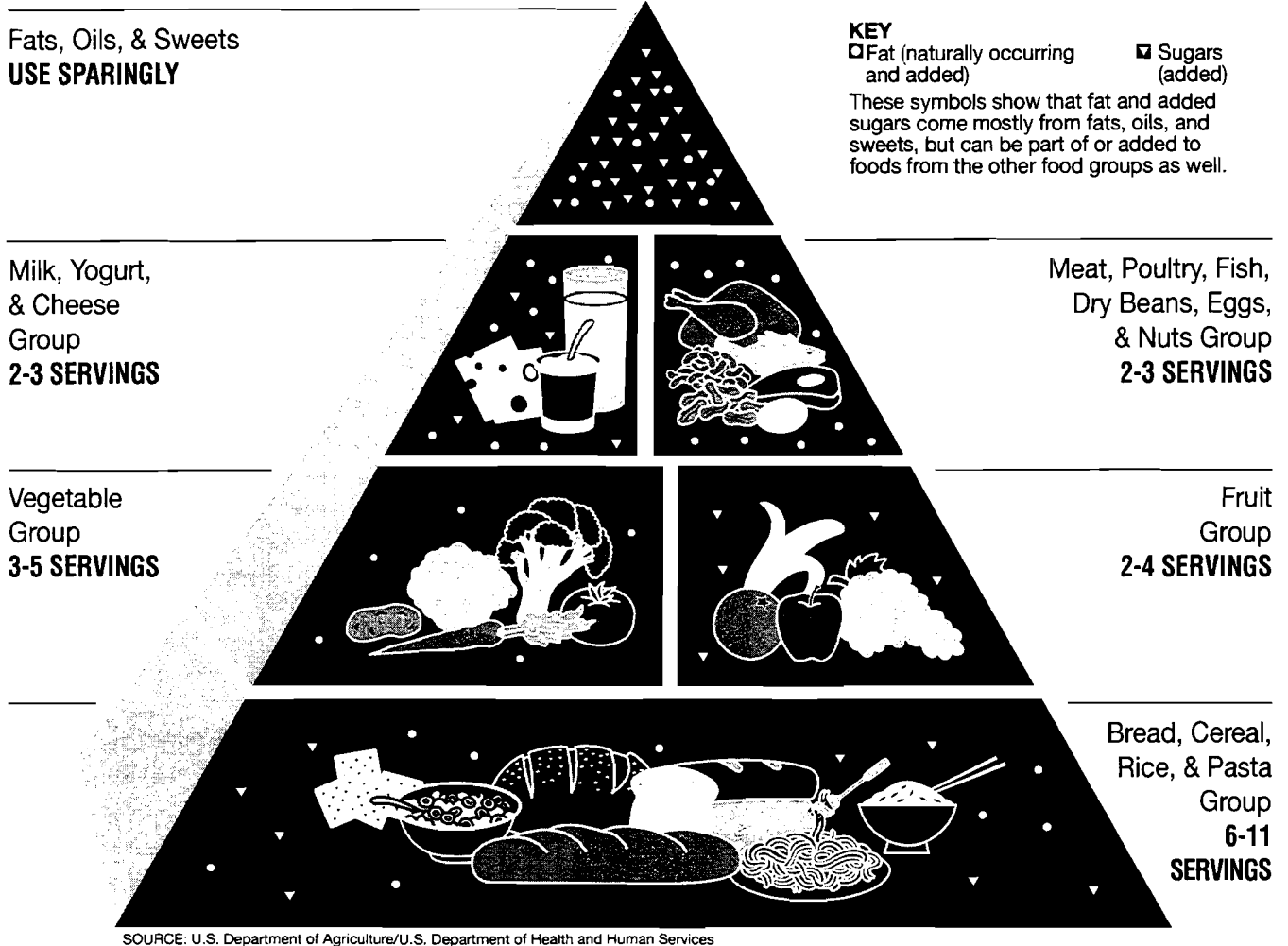
Source: AK DHSS, 1994

**Weighted percentage of the adult population that eats food in this category.*

APPENDIX R

Food Guide Pyramid

A Guide to Daily Food Choices



Use the Food Guide Pyramid to help you eat better every day. . .the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables; and Fruits. Add two to three servings from the Milk group and two to three servings from the Meat group.

Each of these food groups provides some, but not all, of the nutrients you need. No one food group is more important than another — for good health you need them all. Go easy on fats, oils, and sweets, the foods in the small tip of the Pyramid.

To order a copy of "The Food Guide Pyramid" booklet, send a \$1.00 check or money order made out to the Superintendent of Documents to: Consumer Information Center, Department 159-Y, Pueblo, Colorado 81009.

U.S. Department of Agriculture, Human Nutrition Information Service, August 1992, Leaflet No. 572

How to Use The Daily Food Guide

What counts as one serving?

Breads, Cereals, Rice, and Pasta

1 slice of bread
1/2 cup of cooked rice or pasta
1/2 cup of cooked cereal
1 ounce of ready-to-eat cereal

Vegetables

1/2 cup of chopped raw or cooked vegetables
1 cup of leafy raw vegetables

Fruits

1 piece of fruit or melon wedge
3/4 cup of juice
1/2 cup of canned fruit
1/4 cup of dried fruit

Milk, Yogurt, and Cheese

1 cup of milk or yogurt
1-1/2 to 2 ounces of cheese

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts

2-1/2 to 3 ounces of cooked lean meat, poultry, or fish
Count 1/2 cup of cooked beans, or 1 egg, or 2 tablespoons of peanut butter as 1 ounce of lean meat (about 1/3 serving)

Fats, Oils, and Sweets

LIMIT CALORIES FROM THESE especially if you need to lose weight

The amount you eat may be more than one serving. For example, a dinner portion of spaghetti would count as two or three servings of pasta.

How many servings do you need each day?

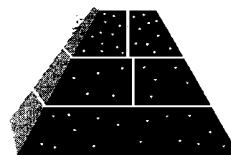
	Women & some older adults	Children, teen girls, active women, most men	Teen boys & active men
Calorie level*	about 1,600	about 2,200	about 2,800
Bread group	6	9	11
Vegetable group	3	4	5
Fruit group	2	3	4
Milk group	**2-3	**2-3	**2-3
Meat group	2, for a total of 5 ounces	2, for a total of 6 ounces	3 for a total of 7 ounces

*These are the calorie levels if you choose lowfat, lean foods from the 5 major food groups and use foods from the fats, oils, and sweets group sparingly.

**Women who are pregnant or breastfeeding, teenagers, and young adults to age 24 need 3 servings.

A Closer Look at Fat and Added Sugars

The small tip of the Pyramid shows fats, oils, and sweets. These are foods such as salad dressings, cream, butter, margarine, sugars, soft drinks, candies, and sweet desserts. Alcoholic beverages are also part of this group. These foods provide calories but few vitamins and minerals. Most people should go easy on foods from this group.



Some fat or sugar symbols are shown in the other food groups. That's to remind you that some foods in these groups can also be high in fat and added sugars, such as cheese or ice cream from the milk group, or french fries from the vegetable group. When choosing foods for a healthful diet, consider the fat and added sugars in your choices from all the food groups, not just fats, oils, and sweets from the Pyramid tip.

ALASKA'S FOOD GUIDE PYRAMID

A Guide to Daily Food Choices

SYMBOL KEY

◆ = Sugar (added)

● = Fat (natural & added)

These symbols show that fat and added sugars come mostly from fats, oils and sweets, but can be part of or added to foods from the other food groups as well.

Fats, Oils, & Sweets
USE SPARINGLY

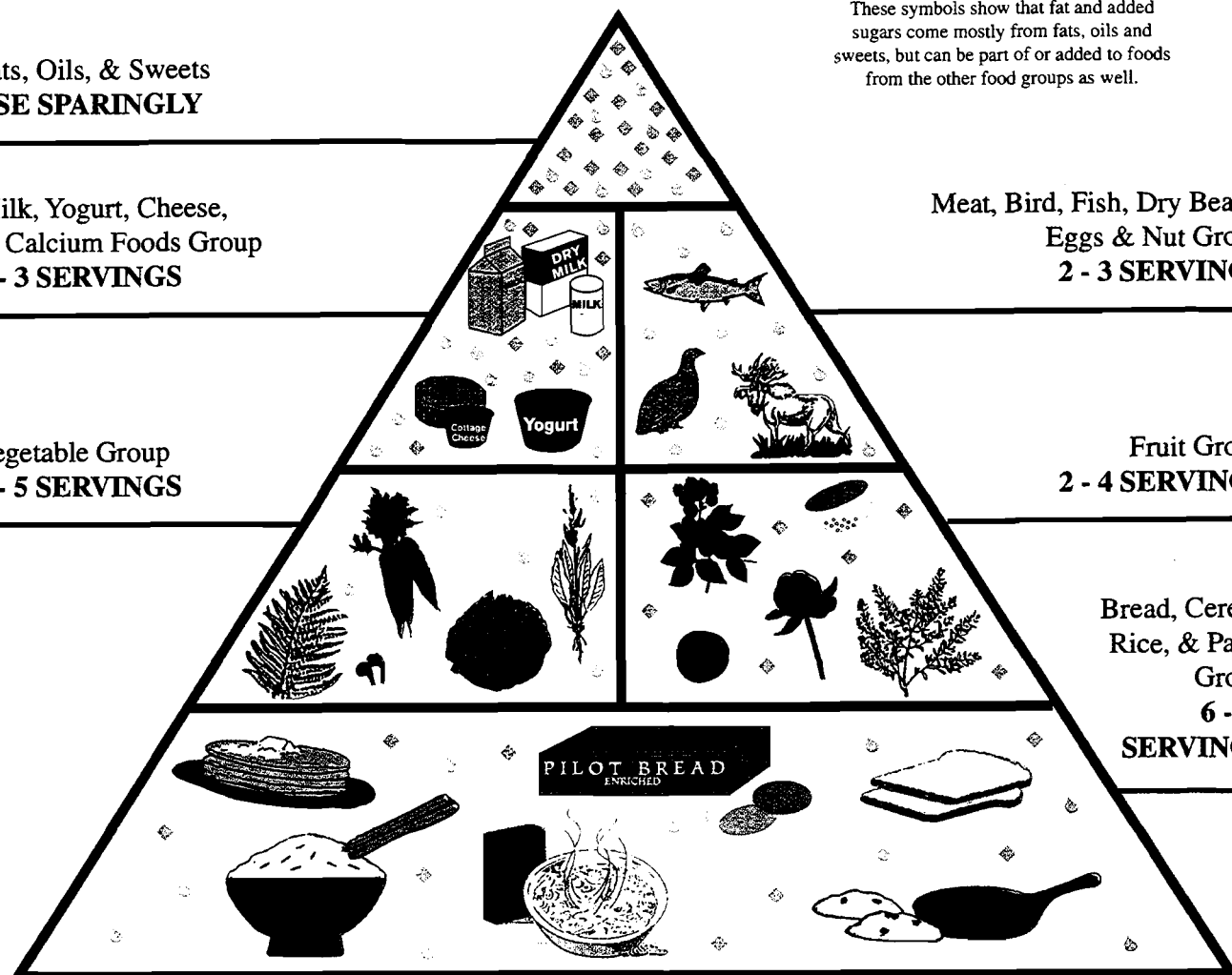
Milk, Yogurt, Cheese,
& Calcium Foods Group
2 - 3 SERVINGS

Meat, Bird, Fish, Dry Beans,
Eggs & Nut Group
2 - 3 SERVINGS

Vegetable Group
3 - 5 SERVINGS

Fruit Group
2 - 4 SERVINGS

Bread, Cereal,
Rice, & Pasta
Group
**6 - 11
SERVINGS**



Use the Food Guide Pyramid to help you eat better every day... the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables; and Fruits. Add two to three servings from the Milk group and two to three servings from the Meat group.

Each of these food groups provides some, but not all, of the nutrients you need. No one food group is more important than another - for good health you need them all. Go easy on fats, oils, and sweets, the foods in the small tip of the Pyramid.

The information in this handout was adapted from the USDA's **Food Guide Pyramid**, U.S. Department of Agriculture, Human Nutrition Information Service, 1992.

HOW TO USE THE DAILY FOOD GUIDE

WHAT COUNTS AS ONE SERVING?

Breads, Cereals, Rice, and Noodles

1 slice of bread
1 piece of pilot bread
1 piece of fry bread
1/2 cup of cooked cereal
1 ounce of ready-to-eat cereal
1/2 cup of cooked rice or noodles

Vegetables

1/2 cup of chopped raw or cooked vegetables
1 cup of leafy raw vegetables

Fruits

1 cup of berries
1 piece of fruit or melon wedge
3/4 cup of 100% fruit juice
1/2 cup of canned fruit
1/4 cup of dried fruit

Milk, Yogurt Cheese, and Calcium Foods

1 cup of milk or yogurt
1-1/2 to 2 ounces of cheese
1 bowl of fish head soup

Meat, Birds, Fish, Dry Beans, Eggs, and Nuts

2-1/2 to 3 ounces (about the size of a deck of cards) of cooked lean meat, bird, or fish
Count 1/2 cup of cooked beans, or 1 egg, or 2 tablespoons of peanut butter as 1 ounce of lean meat (about 1/3 serving)
1 strip (about 6 inches long) of dried fish

Fats, Oils, and Sweets

LIMIT CALORIES FROM THESE
especially if you need to lose weight

How many servings do you need each day?

	Women & some older adults	Children teen girls, active women, most men	Teen boys & active men
Calorie level	about 1,600	about 2,200	about 2,800
Bread group	6	9	11
Vegetable group	3	4	5
Fruit group	2	3	4
Milk group	**2-3	**2-3	**2-3
Meat group	2, for a total of 5 ounces	2, for a total of 6 ounces	3, for a total of 7 ounces

*These are the calorie levels if you choose lowfat, lean foods from the 5 major food groups and use foods from the fats, oils, and sweets group sparingly.

**Women who are pregnant or breastfeeding, teenagers, and young adults to age 24 need 3 servings.

A Closer Look at Fat and Added Sugars

The small tip of the Pyramid shows fats, oils, and sweets. These are foods such as salad dressings, cream, butter, margarine, sugars, soft drinks, candies, and sweet desserts. Alcoholic beverages are also part of this group. These foods provide calories but few vitamins and minerals. Most people should go easy on foods from this group.

Some fat or sugar symbols are shown in the other food groups. That's to remind you that some foods in these groups can also be high in fat and added sugars, such as cheese or ice cream from the milk group. When choosing foods for a healthful diet, consider the fat and added sugars in your choices from all the food groups, not just fats, oils and sweets from the Pyramid tip.

Illustration from *Nutrient Bar Graphs - A teaching aid to learn the value of native foods*, Health Canada, 1984. Reproduced with permission of the Minister of Supply and Services Canada 1994.

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APPENDIX T

Elements Contributing to the Effectiveness of Nutrition Education Interventions (Contento, 1995)

Communication and Education Strategies for Enhancing Awareness and Motivation

1. *Attention to motivators and reinforcers that have personal meaning for the particular population groups is of primary importance.* Examples: taste, convenience, availability of food (effective for all age groups); modeling by the media, peers and adults (effective for young children); modeling by peers (effective for adolescents); anticipated positive and negative consequences of behaviors (effective for adults).
2. *The use of personalized self-evaluation or self-assessment of nutritional status or food-related behaviors with feedback in relation to recommendations.* (Not effective with young children.) Examples: cholesterol screenings; self-assessed dietary intake; 3-day food records; health behaviors checklists.
3. *Active participation, particularly when combined with a behavioral approach.* Examples: food tasting activities; food preparation activities; shopping skills.
4. *Communication through various media channels if the communications are personally relevant to the issues that people confront and the choices that they have to make.* Examples: messages that convey positive or negative consequences of behavior; information about specific items or brands rather than general information about nutrition; information about ingredients to avoid rather than nutrients to include; messages that address a specific stage of readiness to change.
5. *Mass media health campaigns based on the use of a systematic audience-centered planning framework such as social marketing or consumer-based health communications.* Examples: 5 A Day for Better Health campaign which increased awareness of the diet-disease relationships and the need to eat five fruits and vegetables a day; the National Cholesterol Education Program's "know your cholesterol number" campaign which resulted in more people having their serum cholesterol tested.

Behavioral Change Strategies

1. *Use of a systematic behavioral change process.* Examples: for young children, experiences with new foods and systematic exposure to adult and peer modeling; for older children and adults, participate in self-assessments, learn effective behaviors for healthful eating; choose among alternatives; set goals, learn skills to achieve goals, monitor progress towards goal, and be provided with incentives and reinforcements.
2. *Interpersonal and personalized counseling and education, individually or in groups.* Examples: Expanded Food and Nutrition Education Program (EFNEP) in homes; in clinical settings; in community settings.
3. *Social support, such as family and peer involvement.* Examples: programs with young children which used mailed-home materials including family worksheets, games, and other activities (rather than newsletters); older-to-younger peer teaching programs; worksite activities among adults. Family involvement does not appear to be useful for junior or senior high school students.
4. *Use of an empowerment approach that enhances perceived personal control* (useful for older children and adults). Examples: gardening programs for older adults; organization of minimarkets in senior housing facilities.

Environmental Interventions

1. *Point of choice interventions in grocery stores and eating establishments.* Examples: comparisons between cuts of meat in a supermarket, meals in a restaurant, or snacks in a vending machine. Usually effective only while the intervention lasts and affects specific food choices rather than overall diet and meal quality.
2. *Intervening in schools and worksites.* Examples: modifications in school meals; classroom activities; changing quality of foods available for purchase in vending machines or workplace cafeterias.
3. *Workplace interventions that target all employees, not just those at high-risk.* Examples: intercompany contests; work releases to attend nutrition classes; changing foods in cafeterias.

Community Activation and Organization

1. *Active participation of community leaders and members.* A central principle is to enhance the ability of the community to identify its needs and gain the appropriate resources (personal, socioeconomic, and political) needed to solve its problems. Examples: Pawtucket Heart Health project involving 160 community organization and numerous volunteers.
2. *Introduction of environmental and normative changes in the community and modification of social networks.* Organizations and environments are changed as well as individuals. The interventions work on a longer time frame, aiming for permanence in the community. Community members must be partners in the design and implementation of the intervention.

Inservice Nutrition Education for Intermediaries

1. *Teachers.* Inservice education influences quality, but not quantity of nutrition education they provide. Successful approaches provide both hands-on and how-to experiences for teachers, as well as nutrition content. It is important to offer a number of sessions spaced out over time; “one-shot” inservice is not effective in changing teaching practices. As nutrition education becomes more behaviorally focused, the need for inservice and follow-up increases dramatically.
2. *School foodservice personnel.* Training programs should be based on a collaborative and behaviorally oriented model of change that also recognizes organizational and environmental barriers to change.
3. *Professionals and paraprofessionals.* Training clearly results in knowledge gain. Continuing education as it is currently offered is more likely to improve teaching and presentation skills than interpersonal skills and ability to promote dietary adherence. Continuing education with physicians must resolve perceptual barriers (eg. that patients do not want to follow dietary advice) and structural barriers (eg. reimbursement) before it can be meaningfully explored.

APPENDIX U

Low-Cost Nutrition-Related Activities for Worksites

- make available for employees simple food preparation and storage areas, such as a breakroom with a refrigerator and microwave
- where there are vending machines, make available choices of fruit, 100% fruit juice, sandwiches, low fat milk and yogurt
- have available a water cooler, refrigerated water, or drinking fountain
- where there are on-site food services, make available daily low-fat menu choices and nutrition information
- make available at meetings and seminars, healthful refreshments such as fruit and vegetable trays with low fat dip, fruit juice, bagels, and low fat cheeses and crackers instead of doughnuts, pastries, and soda
- distribute nutrition information and handouts in break rooms and pay checks
- encourage employees to use building stairs instead of elevators; enhance stairway lighting and paint

APPENDIX V

Definitions: Retail Food Outlets

***Grocery Store:** Sells prepackaged foods, produce, eggs, meats and fish.

Market (without Food Service): A grocery or food store, produce market, or other place, building or structure used, maintained, or advertised to the public as a place where food or food products are offered for retail sale to the public.

Market with Food Service: A market with either a food service or food processing operation.

Supermarket: A market that ALSO includes *two or more* permitted food service or food processing operations, e.g. a bakery, delicatessen, salad bar, or other similar operation.

***Convenience Store:** Sells only prepackaged foods that have been prepared at other approved facilities. Foods include candy bars, bread, canned foods, packaged lunch meats and bacon, canned sodas and snack foods. No fresh meat or fish, produce, or repackaged bulk items are permitted.

Convenience Store (without Food Service): Small retail store with limited inventory of mainly prepackaged items; e.g. a small village store which sells chips, canned soda, candy and packaged ice cream; student store without food service.

Convenience stores do not include gas stations, video stores, etc. that have a limited amount of prepackaged candy, chips, pop on shelves, reach-ins or in vending machines.

Convenience Store with Food Service: A convenience store and a limited food service or food processing operation under the same roof/operator.

Restaurant: Seated food service.

Institutional Kitchen: Includes public and private schools and church kitchens.

***Snack Bar, Limited Food Prep:** A food facility approved to serve prepackaged foods and certain other foods requiring limited handling and preparations including some potentially hazardous items approved by the Director. Client seating is prohibited.

***Snack Bar, No Food Prep:** Sells only prepackaged foods. Client seating is prohibited.

Limited/Mobile Food Service: A food service operation that is restricted to service of specific food because of establishment size and type of equipment/fixtures, or type of sanitary facilities and controls.

Roadhouse: Public accommodation that includes a food service, bar, public accommodation AND convenience store. Less than the mentioned items would not be considered a roadhouse even if they have "roadhouse" as part of their name.

Bar Associated with Food Service: A bar that also has a separate food service operation in the same facility.

* Municipality of Anchorage definition. All other definitions are from the State of Alaska Department of Environmental Conservation.

APPENDIX W

Distribution of registered dietitians and state population by labor market region, 1995

Labor Market Region	Estimated % Dietitians	% State Population
Anchorage//MAT-SU	51	50
Gulf Coast	6	12
Interior	15	16
Northern	5	4
Southeast	15	12
Southwest	8	6
Statewide	99*	100

Source: AKDA 1996 member listing; AK DOL, 1996

* Total does not equal 100 due to rounding.

APPENDIX X

Statewide nutrition-related chronic disease programs in Alaska

This is an overview of statewide chronic disease activities within Alaska (June 1995). These programs already have or potentially have a nutrition component. The State Department of Health and Social Services does not currently have programs which address the nutrition-related problems of cardiovascular disease (to include heart disease, hypertension and stroke), nor is there a program to specifically address the risk factor of physical inactivity.

State of Alaska Division of Public Health Nutrition-Related Chronic Disease Program Matrix

Program	Statewide Coalition	Activities	Funding Source
Cancer			
Breast & Cervical Screening	Breast & Cervical	<ul style="list-style-type: none"> • Screening/diagnostic services • Professional/public education • Quality assurance & surveillance 	Federal
Central cancer Registry	To be developed	• Plan/implement a statewide central cancer registry to describe Alaska cancer incidence & mortality	
Data Based Intervention Research	Cancer	• Implement & evaluate program interventions	
Diabetes Control Program	Diabetes Advisory Group	<ul style="list-style-type: none"> • Quality assurance & surveillance • Public & professional assessment • Community-based interventions 	Federal/State
Chronic Disease Nutrition Program	Eat Smart Alaska	<ul style="list-style-type: none"> • Public & professional assessment • Statewide dietary assessment • Focus group research • Statewide 5 A Day for Better Health Program 	
PATCH (Planned Approach to Community Health)	PHHS Advisory Committee	<ul style="list-style-type: none"> • Coordination of 10 PATCH grant programs • Technical support • Statewide PATCH training 	Federal

Source: Personal Communication, G Ray, AK DHSS, 1995

*As of March 1995

APPENDIX Y

Alaska Area Native Health Service Nutrition-Related Chronic Disease Program Matrix Statewide Activities

The following programs and activities address the needs of the Alaska Native population. As a result of future compacting, funding may be provided from the Indian Health Service directly to Alaska Native Health Corporations and tribal entities to provide services within specific geographic regions. Those programs and activities are not included in this summary.

<u>Disease/Program</u>	<u>Activities</u>
Cancer	Monitors cancer incidence rates Published <i>Cancer in the Alaska Native Population, 1993</i> Investigates causes of cancers occurring in excess among Alaska Natives Conducts Tumor Board weekly
Cardiovascular Disease	Provides professional care Collaboration on cardiovascular disease and diabetes prevention project with Norton Sound Health Corporation and University of Alaska
Diabetes	Promotes primary prevention Promotes secondary prevention among patients Promotes quality patient care Offers professional education opportunities Provides comprehensive medical care for patient with diabetes
Epidemiology/statistics	Prepares and distributes data on morbidity and mortality and service delivery
Nutrition	Promotes healthful eating incorporating Native foods Investigates role of diet in chronic diseases affecting Alaska Natives Trains paraprofessionals in prevention and dietary treatment of chronic diseases Provides technical assistance to local programs Promotes physical activity to control overweight Coordinates childhood weight monitoring
Prevention	Advocates educational programs to prevent chronic diseases
<i>Source: Personal Communication, B Nobmann, AANHS Nutrition Program, 1995</i>	

